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ABSTRACT

This report documents what has been learned through the National Longitudinal Transition Study (NLTS) of Special Education Students about regular education and secondary students with disabilities. Findings are based on data from more than 8,000 youth in secondary special education, ages 13 to 21, in 1985-86. Focus of the report is on how much time students spent in regular education and the effects of regular education on outcomes independent of student and other characteristics. After an introductory chapter, chapter 2 presents a general description of the methodology of the NLTS and a discussion of analytic considerations unique to this report. Chapter 3 looks at characteristics of students with disabilities in regular education. Chapter 4 describes academic and social outcomes during high school associated with time in regular education. Outcomes for young adults in the areas of postsecondary education, employment, independent living, and community participation are presented in chapter 5. Chapter 6 synthesizes findings from the NLTS about regular education and secondary school students with disabilities. (Contains 41 references.) (DB)

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TRAVERSING THE MAINSTREAM: REGULAR EDUCATION AND STUDENTS WITH DISABILITIES IN SECONDARY SCHOOL

A Special Topic Report from the National Longitudinal Transition Study of Special Education Students

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December 1993

Prepared for:

The Office of Special Education Programs
U.S. Department of Education

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December 1993

Prepared for:

The Office of Special Education Programs
U.S. Department of Education

Prepared by:

Kathleen Hebbeler

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1 REGULAR EDUCATION: OPPORTUNITY OR OBSTACLE?

Much has been written about the types of educational programs best suited to young persons with disabilities, and much more is likely to be written in the future. Like good journalists on the beat, professionals and advocates have reported extensively on the who, what, where, when, and why of education for students with disabilities. The "where" of their education in particular has generated a spectrum of positions and substantial controversy. Should students with disabilities be educated in regular or special classes? Special schools and special classes were established because general or regular education classrooms often did not meet the needs of students with disabilities. But the presumed benefits associated with special classrooms have not come without costs. Stigmatizing labels and segregation have been cited repeatedly as the dark side of special education. The decades-long debate continues today as those concerned with education for students with disabilities look at whether the potential benefits of being apart from regular education outweigh the potential costs.

The purpose of this report is to document what has been learned through the National Longitudinal Transition Study of Special Education Students (NLTS) about regular education and secondary students with disabilities. The NLTS is a congressionally mandated study of school experiences and postschool outcomes of a nationally representative sample of secondary school students with disabilities. Findings from the NLTS are based on data from more than 8,000 youth who were ages 13 to 21 and in special education in secondary schools (grades 7 through 12 or ungraded programs) in 1985-86. The sample is nationally representative and permits generalizations to the population of secondary students with disabilities as a whole, as well as separately to students in each of the 11 federal disability categories that were in use at the time. Because it is a large-scale longitudinal study that spans both the high school and young adult years, the NLTS can answer a number of important questions about regular education for students with disabilities. This report summarizes what we have learned about the role of regular education in the school programs of high school students with disabilities and how regular education in secondary schools relates to outcomes for young adults with disabilities.

For the most part, the analyses reported here are taken from previous NTLS reports. These reports have addressed the high school programs of students with disabilities (Wagner, 1993); their performance in secondary school (Wagner, Blackorby, and Hebbeler, 1993); their postschool outcomes (Wagner, Newman, D'Amico, Jay, Butler-Nalin, Marder, and Cox, 1991; Wagner, D'Amico, Marder, Newman, and Blackorby, 1992); and the relationship between school experiences and postschool outcomes (Wagner, Blackorby, Cameto, and Newman, 1993). These findings have been supplemented as needed by additional analyses. We hope this synthesis of answers to critical questions about the role of regular education will serve to further advance the discussion about the where—as well as the who, what, why, and how—of education for young people with disabilities.

What's Special about Regular Education?

Identifying the setting best suited to promote the academic and social needs of students with disabilities has been a recurring challenge in special education. Special education emerged in the early 20th century because regular education was not able to meet the needs of all children (MacMillan and Hendrick, 1993). Students with disabilities were seen as requiring a fundamentally different type of educational program. Years later, after special classes were created, the need to "mainstream" students with disabilities back into regular classrooms for at least some of their day was recognized. These students' right to public education and an individualized program designed to meet their needs was codified in the 1970s in P.L. 94-142, now known as the Individuals with Disabilities Education Act (IDEA). IDEA requires that each student with a disability be educated in the "least restrictive environment" appropriate to his or her needs. Twenty years after the passage of IDEA, educators, advocates, and parents are still debating what constitutes an appropriate placement for students with disabilities.

Several years ago, the Regular Education Initiative (REI) engendered considerable discussion over the role of special and regular education for students with mild disabilities. Proponents of REI argued that the process of labeling and isolating mildly impaired students in special classes had given birth to an enormous set of bureaucratic and resource-intensive assessment and placement procedures that ultimately did not improve education for the children involved (Will, 1986). New instructional models were advocated to allow students with learning problems to remain in the regular classroom (Reynolds, Wang, and Walberg, 1987, 1988). Opponents of REI noted that these students were receiving special education because of their unique educational needs that had not been met in regular education. They argued that the reformed system ultimately would be detrimental to the welfare of the students it was designed to serve (Braaten, Kauffman, Braaten, Polsgrove, and Nelson, 1988; Camine and Kameenui, 1990).

Currently, much discussion is focused around the concept of "full inclusion" (Giangreco, Chigee, Iverson, 1993; National Education Association, 1992; Simon, Kasasoff and Smith, 1992). Proponents of full inclusion advocate educating all students with disabilities in their neighborhood schools in regular classrooms with their age peers (Sailor, 1991). A recent report from the National Association of State Boards of Education (1992) calls for an inclusive system of education in which, to the maximum extent possible, students with disabilities are educated in regular classrooms with appropriate in-class support. The Association for Persons with Severe Handicaps (1991), calls for a service delivery system that emphasizes the provision of specialized staff, resources and services to meet individual needs in the regular classroom. The Learning Disabilities Association of America (1993) notes, however, that the regular classroom is not the appropriate environment for many students with learning disabilities who need alternative educational approaches that cannot or will not be provided in the regular classroom.

Several important distinctions tend to get lost in the often-heated debate over regular education and students with disabilities. These have important implications for the kinds of questions we ask about regular education for students with disabilities. These points are also critically important for understanding the data from the NLTS that are presented in this report.

- **Regular education at the secondary level differs considerably from regular education in elementary school.** The secondary school day is fragmented, generally into six or seven "periods" for each student. Many students have some choice in the kinds of courses they take (e.g., academic courses, vocational courses). These facts change the important issues regarding inclusion from whether students with disabilities should be included in regular education to how much they should be included and for what kinds of courses. Further, high school coursework emphasizes content and presumes the mastery of basic skills (Lieberman, 1992). This can be problematic for many students with disabilities, who often are substantially behind their peers in both basic and higher-order skills by the time they reach secondary school (Schumaker and Deshler, 1988). Is inclusion appropriate if the content and skills required to succeed in a course are absent?

- **Regular education is not one setting but many different settings that vary considerably from one classroom to the next.** MacMillan and Hendrick (1993) point out that "the issue of setting assumes that where the child is taught is more important than what is done with the child once he or she is placed. Further, it assumes homogeneity of treatments (i.e., the same thing goes on in all special classes)..." (pp. 33-34). Not all special education settings are either good or poor places to educate students with disabilities; neither are all regular education settings. A good education is defined by what goes on in the setting, not just who else is in it.

- **Outcomes of the high school experience include the attainment of many different goals including academic, functional, and personal or social goals.** For students with disabilities, the academic and personal/social domains may sometimes conflict; a setting that promotes one may negatively affect the other. A student may experience academic success in a special education class but receive behavioral benefits from friendships with students in regular classes. The course content in the regular class may be at a higher level; the student's difficulty in mastering the content may lower self-esteem. There may be no one best setting to achieve all types of outcomes.

- **What could happen for students with disabilities in regular classrooms is not necessarily what has happened or is happening.** As Kauffman (1993) notes "we understand relatively little about how students' placement determines what is possible and what is probable as far as instruction and its outcomes are concerned" (p. 8). Throughout this report, we will be discussing "time in regular education" using data for students who were in secondary school between 1985 and 1990.

> The relationships of their regular education placements to outcomes reflect the nature of regular education provided at that time to students with disabilities. They do not reflect the nature of regular education being provided now, or of regular education that could be provided to students with disabilities in an environment of appropriate reform or adequate resources. What was the case in the late 1980s should not limit our expectations for what might be the case for students with disabilities in regular classes in the future. Survey research, such as that conducted as part of the NLTS, is inherently conservative in that it can report only on what existed. Different types of studies are required to examine the impact of pushing the limits of what can be.

Research Questions and Conceptual Framework

Existing research has contributed surprisingly little to clarifying the discussion of the role of regular education for students with disabilities. One frequently cited study by Carlberg and Kavale (1980) involved a meta-analysis of 50 studies that looked at the effect of regular versus special class placements. The authors note that investigators have used a "bewildering array of tests and measures" (p. 298) to determine the academic and social consequences of placement. Most of these studies were painfully short on adequate controls for the differences between students who were educated in different placements, making it difficult to determine whether differences between them related to abilities and disabilities or to placement. Despite these shortcomings, earlier research found that, for all groups combined, special class placement was inferior to regular class placement, regardless of the type of outcome measure examined. However, the meta-analysis showed different effects for different types of students. Specifically, special classes were associated with inferior outcomes for students with below-average IQs. Special classes were superior to regular classes for students with emotional disturbances, behavior disorders, or learning disabilities. Whether this conclusion or others in the research literature apply to secondary school classes, given their unique features, is unknown.

The NLTS provides a unique opportunity to describe the extent of regular education course-taking among secondary school students with disabilities and to examine the relationship between regular education and social and academic outcomes. The following questions will be addressed in this report.

During Secondary School

- How much time did secondary students with disabilities spend in regular education classes?
    - What types of courses did students take in regular education (e.g., academic, vocational)?
    - Who spent the most time in regular education? What factors (disability, gender, etc.) were related to time in regular education?
    - What supports were available to regular education teachers when students with disabilities were in their classrooms?

- How did students perform in their regular and special education classes?
- How was time in regular education related to academic achievement in secondary school?
- How was regular education related to social outcomes in secondary school?

After Secondary School

- What was the relationship between time in regular education and postschool outcomes, including employment, postsecondary education, independent living, and community participation?

These questions are derived from a conceptual framework that has guided the work of the NLTS since its inception. The framework, shown in Figure 1-1, depicts in-school and postschool outcomes as influenced by several sets of factors, including the school context, school services, and the individual, family, and community characteristics. Throughout this report, our focus will be on placement, a single factor within the set of school programs and services factors (Box C) and its relationship to other factors in the framework. After describing the extent of regular education course-taking, we will examine how students with different disabilities and demographic characteristics differed in their time in regular classes (Box A). As part of exploring the difference between students in regular education course-taking, we will also examine how school characteristics and policies were associated with placement in regular education (Box B).

Box D identifies some of the student outcomes that have been examined by the NLTS, including school performance, school completion, and social activities. In this report, we look specifically at how these outcomes were related to time in regular education. Box E identifies the young-adult outcomes examined by the study. The NLTS has looked at postsecondary education, employment, social activities, independence, and overall community participation of young persons with disabilities up to 5 years out of school. In this report, we look at these outcomes specifically with regard to the time spent in regular education classes in high school to learn whether more time in regular education was associated with better outcomes for students with disabilities.*

Several caveats should be kept in mind when interpreting the findings from the NLTS regarding regular education. The first was mentioned previously but bears repeating. The NLTS is a large-scale national survey that can only reflect educational practice at the time of the data collection. These findings capture what existed at a particular point in time under a particular set of circumstances. On the basis of these data, we cannot say what would happen under different circumstances—for example, if secondary schools were radically restructured or academic standards were significantly raised or special education students received more or different support for their regular classes. As we will see, the data certainly suggest some predictable directions under certain scenarios, but these remain guesses, not conclusions.

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* Adult programs/services (Box F) are not addressed in this report.

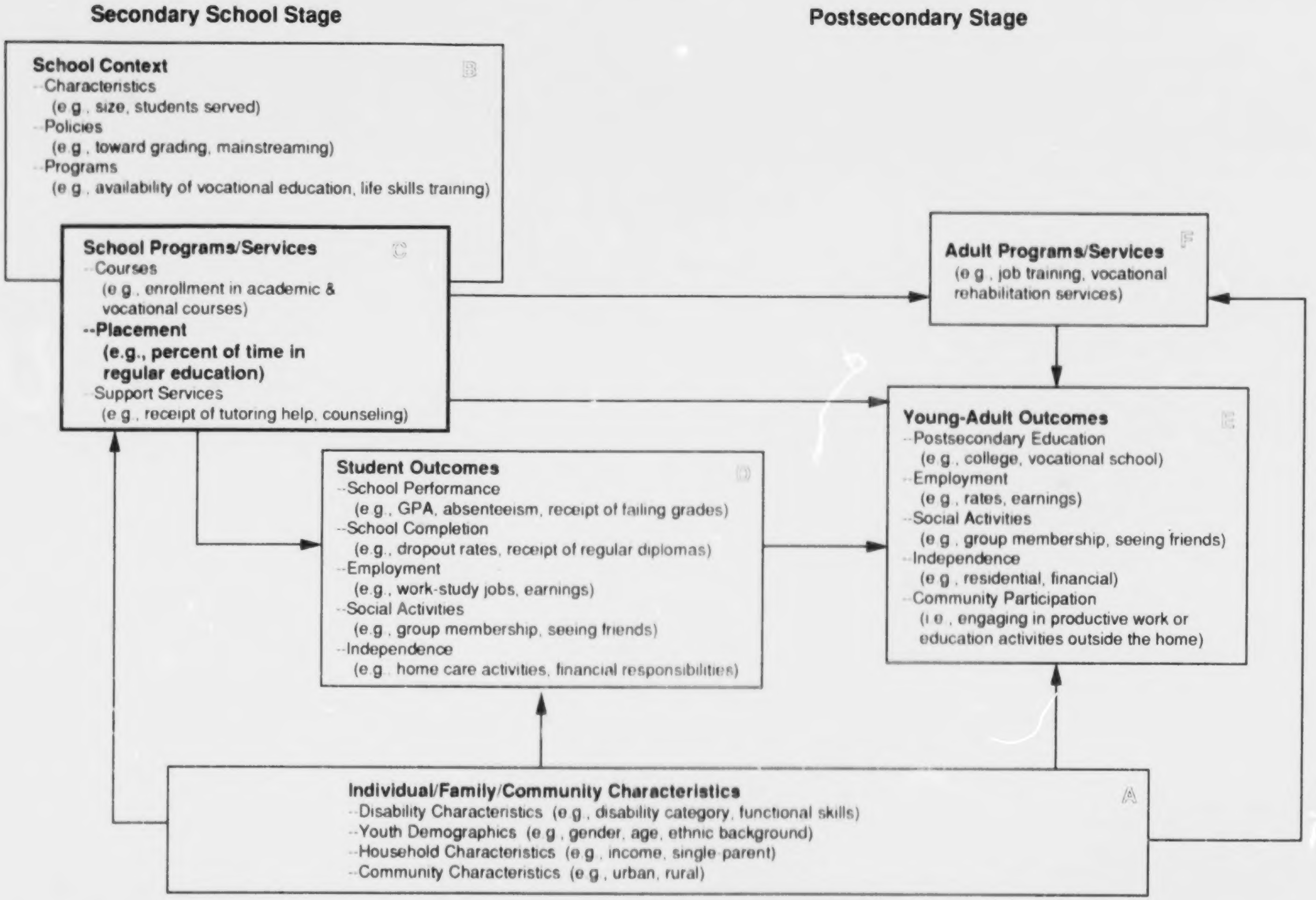
Secondary School Stage
Postsecondary Stage
School Context
B
--Characteristics
(e.g., size, students served)
--Policies
(e.g., toward grading, mainstreaming)
--Programs
(e.g., availability of vocational education, life skills training)
School Programs/Services
C
--Courses
(e.g., enrollment in academic & vocational courses)
--Placement
(e.g., percent of time in regular education)
--Support Services
(e.g., receipt of tutoring help, counseling)
Adult Programs/Services
F
(e.g., job training, vocational rehabilitation services)
Young-Adult Outcomes
E
--Postsecondary Education
(e.g., college, vocational school)
--Employment
(e.g., rates, earnings)
--Social Activities
(e.g., group membership, seeing friends)
--Independence
(e.g., residential, financial)
--Community Participation
(i.e., engaging in productive work or education activities outside the home)
Student Outcomes
D
--School Performance
(e.g., GPA, absenteeism, receipt of failing grades)
--School Completion
(e.g., dropout rates, receipt of regular diplomas)
--Employment
(e.g., work-study jobs, earnings)
--Social Activities
(e.g., group membership, seeing friends)
--Independence
(e.g., home care activities, financial responsibilities)
Individual/Family/Community Characteristics
A
--Disability Characteristics (e.g., disability category, functional skills)
--Youth Demographics (e.g., gender, age, ethnic background)
--Household Characteristics (e.g., income, single parent)
--Community Characteristics (e.g., urban, rural)

FIGURE 1-1 CONCEPTUAL FRAMEWORK OF TRANSITION EXPERIENCES AND OUTCOMES OF YOUTH WITH DISABILITIES

Second, we have gone to great analytic lengths to examine the effects of regular education on outcomes, independent of student and other characteristics. However, the possibility still remains that what appears to be an effect for regular education is actually a reflection of the higher competencies of students placed in regular education classes. These data are not based on random assignment of students with disabilities to regular education classes. Presumably, students in the NLTS database were placed in their regular education classes with some regard for their skill level. In all likelihood, the most capable students spent more time in regular education (this question is addressed in Chapter 3). These would be the same students we would expect to have better outcomes as young adults. Although sophisticated analytic techniques have been used to try to understand some of the complexities of the antecedents and consequences of regular education, our understanding is limited to the variables measured in the study. To the extent that important contributing variables were not measured and, thus, not controlled for in the analyses, regular education may be a consequence of rather than a contributing factor to student competencies.

Finally, this report focuses almost exclusively on how much time students spent in regular education. Unfortunately, from the "arm's length" of a national survey, the NLTS could learn little about what went on during the hours students spent in either their regular or special education classes. Whenever supplemental data are available, such as the data on behavior in regular education classes or the kind of support teachers received, we present these data to enrich the discussion of the role of regular education in serving students with disabilities.

Organization of the Report

Chapter 2 presents a general description of the methodology for the NLTS and a discussion of some of the analytic considerations unique to this report. The remainder of the report is organized around the research questions presented above. Chapter 3 looks at who was in regular education. Chapter 4 describes academic and social outcomes during high school associated with time in regular education. Outcomes for young adults in the areas of postsecondary education, employment, independent living, and community participation are presented in Chapter 5. Chapter 6 synthesizes what we have learned from the NLTS about regular education and secondary school students with disabilities.

2 MEASUREMENT AND ANALYSIS CONSIDERATIONS

The NLTS was designed to address a number of descriptive and explanatory research questions for diverse audiences using multiple sources of data and a variety of analytic approaches reported in different formats. This chapter provides an overview of methodological issues pertinent specifically to the analyses of regular education. The sample for the NLTS involved more than 8,000 youth representing the national population of secondary special education students who were in school in the 1985-86 school year and were between the ages of 13 and 21 years old. The sample was drawn so that the study can generalize to the 1985-86 secondary special education students, both as a whole and for those in each of the 11 federal disability categories separately. Data were first gathered in 1987 and then again for the same youth in 1990. For more information on the design, sampling, or measurement of the NLTS more broadly, see Wagner, Newman, and Shaver (1989) regarding data collection procedures for the first wave of NLTS data and Marder, Habina, and Prince (1992) for the second wave. Copies of data collection instruments are also included. Sampling issues are presented in greater detail in Javitz and Wagner (1990 and 1993).

This chapter first describes the sources of NLTS data used in this report. We then discuss several measurement issues pertaining to variables constructed for the analyses in this report. The several analytic subsamples used for various purposes throughout the report are then described, along with our approaches to weighting the NLTS data to generalize to the population of student with disabilities and to estimating standard errors to account for the stratified sample of the NLTS. The chapter closes with a descripton of important analysis and interpretation considerations related to the data on regular education.

Data Sources

Findings regarding regular education and its relationship to in-school and postschool outcomes presented in this report are based on data derived from multiple sources:

- **Secondary school transcripts**. High school transcripts were collected as part of the 1990 data collection. They were sought for all sample students who attended secondary school after the 1986-87 school year. Transcripts included data on school year, grade level, days absent (if available), and classes. For each class, the record included whether it was a regular or special education class, grade, credits, hours in class (when different from credits), and work experience (if applicable). Transcripts were collected for 2,892 students.
- **School program content forms**. For students whose school programs were not recorded on transcripts (usually those with the most serious impairments), school program content forms were completed by a teacher familiar with the student's

program. This form consisted of one page which recorded the percentage of instructional time in six areas: academics, life skills, general vocational exploration, specific vocational skills training and work experience, nonacademic and non-vocational activities and disability support services. School program content forms were collected for 414 students.

- **School record abstracts**. As part of the 1987 data collection, local school staff abstracted school record information for the student's most recent school year (either the 1986-87 or 1985-86 school year). School record data included courses taken, whether regular or special education courses, and grades received. School record abstracts were collected for 6,241 students. For some students included in the analyses reported here, both school record abstracts for a single year and transcripts for more years were available. For other students, data from only the single year recorded on the school record abstract were available.
- **Student school program survey**. For all students still in school in the 1990-91 school year and for those students leaving school in the 1988-89 and 1989-90 school years who were classified as learning disabled, speech impaired, seriously emotionally disturbed, or mildly/moderately mentally retarded,* teachers were surveyed regarding their performance expectations for the student in regular and special education settings and other aspects of the student's program.
- **Parent/student telephone interviews**. In 1987, parents and, in 1990, parents and students (if they were able to respond for themselves) were administered a structured interview by telephone to obtain information on services received by the students and outcomes in the areas of employment, education, and independence. Interview data also were the source of information on gender, ethnic background, and household income.

Measurement Issues

The subsequent analytic chapters of this report present information regarding the measurement of specific variables used in those chapters. However, several general points about NLTS measures used in multiple chapters also should be clear to readers as they consider the findings reported here.

Combining data from multiple sources. Variables used in the analyses reported here combine data from various of the sources noted above. For example, determining whether a student took a regular education class at a given grade level used data for that grade level, whether they came from transcripts, school content forms, or school record abstracts; thus, statistics such as the percentage of students taking regular education classes aggregate data from these multiple sources. See Wagner et al. (1991) for an analysis of issues related to combining data from various sources; results fail to provide evidence against maximizing the data by combining them from different sources when appropriate.

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* The surveys in 1988 and 1989 were part of a special study done for students in these categories only.

Categorizing students by primary disability category. Information about the nature of students' disabilities came from rosters of all secondary school students in special education that were submitted by school districts included in the study. In all tables in this report, students were assigned to a disability category based on the primary disability designated by the student's school or district in the 1985-86 school year. Definitions of disability categories and criteria for assigning students to them vary from state to state and even between districts within states. Because we have relied on category assignments made by schools and districts, NLTS data should not be interpreted as describing students who truly had a particular disability, but rather as describing students who were categorized as having that disability by their school or district. Hence, descriptive data are nationally generalizable to students who were classified as having a particular disability in the 1985-86 school year.

Demographic characteristics. Findings in this report are provided for youth who differ in gender, ethnic background, and household income. For the majority of students, these measures were taken from interviews with parents in 1987. For a small number of students, interviews could not be completed in 1987, but were completed in 1990. For these students, demographic characteristics were obtained in the 1990 interviews. To the extent that family income was different between 1987 and 1990, some degree of measurement error is introduced, which may reduce the strength of association with other student experiences. Regarding ethnic background, only the categories of white, African American, and Hispanic had enough students to report findings for those categories separately. Students of other ethnic backgrounds are included in the samples of all students, of disability categories, of gender, and of household income, but are not reported separately by ethnic background.

Types of courses. Courses listed on students' transcripts were coded into course content areas using a modified version of the Classification of Secondary School Courses coding system developed for the National Center for Education Statistics (NCES) in 1982, and the Special Education Course Classification and Coding System developed for NCES and the National Assessment of Vocational Education. Those systems permit distinguishing courses at a fine level of detail. However, to take advantage of that level of detail, course catalogs giving descriptions of course content, prerequisites, or skill levels are required. Obtaining catalogs from the almost 2,000 schools attended by NLTS sample members was infeasible. Therefore, course types were coded directly from course titles on transcripts, which required groups courses for analysis into fairly gross categories (e.g., English, social studies).

Credits earned. The number of credits, in Carnegie units, that were associated with courses students took generally were indicated on transcripts. For the small number of students or courses that did not have credits assigned, we inferred the number of credits from the duration or intensity of the course: a one-period course for a full year was assigned a value of one Carnegie unit, a single-semester course for one-period was assigned a half of a Carnegie unit, etc.

Placement. Whether courses were taken in regular education or special education settings is a critical element in these analyses. In many cases, special education classes were designated clearly on transcripts. Nevertheless, school staff were asked to annotate each student's transcript so that the placement of each course was clear. (See Marder, Habina, and Prince, 1992, for copies of annotation instructions and all other data collection instruments for the second wave of NLTS data collection.)

School completion. Some aspects of school experiences are distinguished for students on the basis of their mode of school leaving—graduating or dropping out. School leaving status was determined from school reports when these were available. In the absence of a complete school record or school-leaving report from a school, parent or student reports were used. Other analyses of NLTS data revealed a high level of agreement between parent/student reports and school reports when both sources of information about school-leaving status were available (Wagner et al., 1991, Appendix C).

Analytic Subsamples

Three analytic subsamples were constructed for various analyses included in this report.

Course-taking. The first subsample was designed to maximize information regarding students' program of study in secondary schools, including participation in regular education. Analyses with this subsample are reported in Chapters 3 and 4. Students in this subsample were required to satisfy three conditions:

- They were enrolled in a regular (not special) secondary school in their most recent school year. The type of school attended was reported in a school background survey for each school attended by sample students.
- Data were available from a transcript, school record abstract, and/or school content form for either an ungraded program or grades 9, 10, 11, and/or 12.
- Their age while in school was less than 24 years.

A sample of 4,828 students met these criteria. However, not all students appear in any single analysis, largely because of the grade-level cohorts that are the basis of many of the analyses. Of the 4,828 students, fewer than 3,000 had data for any single grade level, and only about 2,200 had data for all four grade levels of high school. In other words, a core sample of approximately 2,200 students had data available for 4 full years. They are included in each grade-level cohort, supplemented by several hundred other students who had data available, usually for that grade level alone. Other analyses may further reduce the samples in a grade level by focusing only on students with particular characteristics (e.g., the characteristics of regular education classes for students who spent any time in regular education classes).

A similar and related subsample was created that included rather than excluded students in special schools. This subsample allowed the computation of the weighted percentage of all secondary students with disabilities who spent time in regular education settings. As explained in Chapter 3, students in special schools were assumed for this analysis to have spent no time in regular education classes. There were 5,660 students included in the sample, but again, not all had data for every grade level. Complete data for grades 9 to 12 were available for 2,250 students, 1,866 of whom attended regular schools.

Teacher reports. The second major subsample has survey data on teachers' perceptions regarding several aspects of students' secondary school programs and supports, as well as of students' behavior in school. These data were collected through the student school program survey, and findings from this survey are reported in Chapters 3 and 4. Students in this subsample were required to satisfy the following conditions:

- They were enrolled in a regular (not special) secondary school in their most recent school year.
- Their age while in school was less than 24 years.
- Their age in 12th grade or in the last year of an ungraded program was between 17 and 23.
- Students' school program survey data were available for either 12th grade or an ungraded program.

It was not feasible to collect these more detailed survey data from all students in all schools each year. Hence, only 720 students met the criteria for this subsample.

Postschool outcomes. This third subsample was designed to maximize information regarding the relationship of school programs and outcomes in seven areas. Findings from this subsample are reported in Chapter 5. Youth in this subsample were required to satisfy three conditions.

- They were enrolled in school during the 1987 school year and were out of school (graduated, dropped out, or aged out) by 1990.
- They had data from parent interviews in 1987 and parent or student interviews in 1990.
- Data were available from a transcript for the time they were in school, and/or school program content form for either an ungraded program or grade levels 9, 10, 11, and/or 12.
- They were not institutionalized in 1990.

A sample of 1,888 students met these criteria. However, not all students appear in any single analysis or model, largely due to missing data for some of the variables relevant to this report.

Weighting the NLTS Data

In examining the role of regular education for students with disabilities, we generally report percentages of students with a particular status or experience (e.g., the percentage in regular education 75% or more). Percentages were weighted to represent students nationally; they are not percentages of the sample, but estimates for the population of students with disabilities as a whole and for students in each of 11 federal special education disability categories in use in 1985. Students were weighted to represent all students enrolled in special education in the 1985-86 school year. In other words, rather than each student counting equally in calculating percentages, each student's value for a variable was weighted proportionate to the number of students like him/her in the full population of students with disabilities nationally. Hence, for example, because roughly similar numbers of students were sampled from each disability category, values for students with learning disabilities were weighted more heavily than those for students with visual impairments when discussing students as a group because of the significantly greater number of students with learning disabilities in the population as a whole.

Table 2-1 illustrates the concept of sample weighting and its effect on percentages or means that are calculated for students with disabilities as a group. In the example in Table 2-1, 10 students are included in a sample, 1 from each of 10 disability groups, and each has a hypothetical value regarding whether that student took a regular academic education course (1 for yes, 0 for no). Five students took such a course, which would result in an unweighted sample mean of 50%. However, this would not accurately represent the national population of students with disabilities because many more students are classified as learning disabled or mentally retarded than orthopedically or other health impaired, for example. Therefore, in calculating a population estimate, we apply weights in this example that correspond to the proportion of students in the population that are from each disability category (actual NLTS weights account for disability category, age, and several other aspects of students and the districts from which they were chosen, as specified in Javitz and Wagner, 1990). The sample weights for this example appear in column C. Using these weights, the weighted population estimate is 72%. The percentages in all NLTS tables are similarly weighted population estimates, whereas the sample sizes are the actual number of cases on which the weighted estimates are based (similar to the 10 cases in Table 2-1).

NLTS sample weighting involved deriving weights for all students for whom data were available in 1987 from parents or school records, as described in Javitz and Wagner, 1990. Wave 1 weights provide the best estimate of the characteristics of the whole population of students with disabilities who had been secondary school special education students in the 1985-86 school year.

Table 2-1

EXAMPLE OF WEIGHTED PERCENTAGE CALCULATION

Disability Category	A Number in Sample	B Took Regular Academic Course*	C Weight for Disability Category	D Weighted Value for Category
Learning disabled	1	1	5.6	5.6
Emotionally disturbed	1	1	1.1	1.1
Speech impaired	1	1	.3	.3
Mentally retarded	1	0	2.4	0
Visually impaired	1	1	.1	.1
Hard of hearing	1	1	.1	.1
Deaf	1	0	.1	0
Orthopedically impaired	1	0	.1	0
Other health impaired	1	0	.1	0
Multiply handicapped or deaf/blind	1	0	.1	0
TOTAL	10	5	10	7.2

Unweighted sample percentage = 50% (Column B total divided by Column A total)

Weighted population estimate = 72% (Column D total divided by Column C total) were not institutionalized in 1987. This group of 1,888 students, weighted with their weights from the 1987 data collection, provided the best picture available of the characteristics of the population of students to which the subsamples of students should generalize.

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* Yes=1; No=0

To reweight the subsample of 4,828 students in the course-taking analyses and the 720 in the teachers' survey of secondary programs analysis to represent students as a group, we first identified the group of students we wished to represent—students who were (1) enrolled in special education in the 1985-86 school year, (2) enrolled in a regular (not special) secondary school in the 1985-86 or 1986-87 school year, (3) in 9th grade or higher when they left school, and (4) age 23 or younger while in secondary school. The universe for the teachers' perceptions subsample also represented students who, if they were in an ungraded program, were between the ages of 17 and 23 when they left school. This group of 5,442 student (3,915 for the teacher perception analysis), weighted with their wave 1 weights, provide the best picture available of the characteristics of the population of students to which the subsamples of students should generalize.

Similarly, to reweight the subsample of 1,888 students used in the analyses of postschool outcomes we first identified the group of students we wished to represent—students who (1) were enrolled in special education in the 1985-86 school year, (2) were enrolled in a secondary school in the 1985-86 or 1987-87 school years, (3) had 1987 parent interview data, and (4)

We then used the group of 5,442 students (3,915 for teacher perception analysis, 1,888 for the outcomes analysis) and their 1987 weights to calculate the following characteristics of the population as of 1987:

- **Disability**—grouped using the 11 federal special education disability categories: learning disabled; seriously emotionally disturbed; speech impaired; mentally retarded; visually impaired (partially sighted or blind); hard of hearing; deaf; orthopedically impaired; other health impaired; and multiple (multiply impaired or deaf/blind). Disability category was designated by schools or districts from which students were sample originally.
- **Age**—the categories were students born in the years 1970-72; 1967-69; and 1966 or before. Age was determined from parent reports and/or school records.
- **Ethnic background**—grouped as African American, white, Hispanic, and a combined category for Native American/Alaskan native, Asian/Pacific Islander, and "other." In addition, there was a category for unknown, which included "don't know," refusals, and any other missing data. Parent reports or, if parent interviews were missing, school records were the source of ethnic background.
- **Gender**—as reported by parents or, if no parent interview was obtained, as found on school records.
- **Annual household income**—grouped as under $12,000; $12,000 to $24,999; and $25,000 and over. Those with incomes of $25,000 or less but otherwise unspecified were grouped with those with household incomes under $12,000. In addition, there was a category for those with missing information, which included those who responded "don't know," refused to answer, indicated that the student was institutionalized, and any other missing values. Income was determined from parent report.

The third step was to calculate weights for the subsamples of students so that they matched the demographic distributions of the 5,442 (or 3,915, or 1,888) students on the characteristics listed above. The weighting was accomplished using Deming's algorithm, which iteratively modified the 1987 weights for the students in each of the three subsamples until they generated demographic distributions that were very similar to those of the students used to estimate the population. Each disability class was weighted separately; the distributions of the smaller subsamples matched that of the larger sample within a fraction of 1%.

Estimating Standard Errors

Because the NLTS involves a sample of students with disabilities from which estimates are made for the broader population of students, it is important to determine the statistical variability of the population estimates—i.e., how precisely are we estimating from our sample the characteristics of the population to which the NLTS generalizes? If, for example, weighted NLTS data indicate that 60% of the population of students with disabilities took a regular education course in 10th grade, we need to know how close that estimate is to the true level of enrollment that would be measured for the whole population of students. A standard error indicates the precision of the estimates; standard errors are reported in all data tables in NLTS documents to permit readers to understand the range of variability of the estimates provided.

To elaborate, the standard error of the estimate of 60% in regular education used as an example above might be 3%. In this example, we would be confident that, 95 times out of 100, the actual percentage of the national population of students with disabilities who were vocational students would be 60%, plus or minus 1.96 times 3%, or between 54% and 66%. The width of this interval reflects the fact that the 60% estimate is based on only a sample of students, and the "luck of the draw" could result in our selecting proportionately somewhat more or fewer students in vocational education than in the national population.

Standard errors for the NLTS were computed with a procedure that differs somewhat from standard calculation routines. Standard routines assume a simple random sample, whereas the NLTS has a stratified cluster sample, which increases the standard errors of estimates compared with a simple random sample. In addition, the reweighting for the 1990 data collection introduced a small amount of additional variability.

Pseudo-replication is widely accepted as a variance estimation technique for databases that have the sample characteristics of the NLTS. However, it is not cost-effective for estimating the standard errors of the thousands of variables and subpopulations tabulated in the numerous NLTS reports. Therefore, pseudo-replication was conducted on a limited number of variables to calibrate a cost-effective approximation formula. The procedures used in this calibration are described in Javitz and Wagner (1990). These procedures generated the standard errors reported for percentages of students with particular experiences at a given point in time (e.g., the percentage of students enrolled in regular education in 12th grade).

Analysis Issues and Strategy

Interpreting Grade-Level Samples

Some of the findings in this report are presented in conjunction with grade-level designations; that is, we present the average number of regular education courses failed in 9th grade, 10th grade, etc. Further, we generally present these grade-level data in a single table for a particular measure. However, each grade level constitutes a different subsample. The proper interpretation of grade-level analyses considers each grade level as a separate cohort. The findings for each grade level and the differences between grade levels are accurate for each grade-level cohort, but should not be interpreted as a trend observed for particular students as they move from grade level to grade level. As an example, we might observe an improvement in student performance when comparing the cohort of 12th-graders with the cohort of 9th-graders, which might reflect the different composition of the two cohorts (dropouts with poor performance were no longer represented in the 12th-grade cohort), rather than a pattern of improving performance among students who stayed in school the entire 4 years.

We chose the grade-level cohort approach to analysis, rather than concentrating on trends for students who stayed in school for the full 4 years, for several reasons. First, a large percentage of students with disabilities dropped out of school; eliminating those students from analysis would limit what we could learn about the effectiveness of school programs for students with disabilities.

Second, we wished to make grade-level estimates as accurately as possible. Thus, we maximized the sample size for each cohort by including students who had any information for a particular grade level, irrespective of whether they had data available for any other grade level. That is, we may have had course-taking data for some students only in 10th grade and not for any other grade level. Thus, different subsamples comprise each grade level. The separate cohorts have different characteristics because they were independently derived, as well as because each subsequent cohort was "purged" of the dropouts who left school before that grade level.

Table 2-2 describes the characteristics of each grade-level cohort. There were no dramatic or statistically significant aggregate differences between grade levels with respect to disability and demographic characteristics. However, there were marginal shifts over time. For example, there were proportionally more students with learning disabilities in 12th grade than in 9th grade, and proportionately fewer students with serious emotional disturbances or mental retardation. There were similarly small shifts in the distributions of ethnic background and household income: there were proportionately more white students and students from families earning more than $25,000 annually. None of these differences is statistically significant, however.

Despite only marginal shifts in the aggregate, these small changes can be proportionately large for a given disability group or demographic category. For example, students with serious emotional disturbances changed only 2 percentage points in their representation in the aggregate disability distribution, yet that is a relatively large proportion of this small category of students. Overall, approximately 50% of such students did not complete school. Thus, it is important to recognize that there were differences between the grade levels on dropout-related variables. In this report, we stress this point where it is relevant.

Table 2-2

STUDENT BACKGROUND CHARACTERISTICS, BY GRADE LEVEL

	Grade Level					
Characteristic	9th	10th	11th	12th	Complete Data 9-12	Not Assigned to Grade Level
Percentage categorized as:						
Learning disabled	61.6 (1.8)	61.5 (1.8)	63.9 (1.8)	64.8 (1.7)	64.7 (2.1)	30.8 (3.9)
Emotionally disturbed	9.7 (1.1)	9.7 (1.1)	8.2 (1.1)	8.0 (1.0)	7.9 (1.2)	7.1 (2.2)
Speech impaired	4.2 (.7)	4.1 (.7)	4.2 (.8)	4.2 (.7)	4.6 (.9)	.6 (.7)
Mentally retarded	19.4 (1.5)	19.5 (1.5)	18.5 (1.5)	18.0 (1.4)	17.1 (1.7)	52.9 (4.2)
Visually impaired	.6 (.3)	.6 (.3)	.6 (.3)	.6 (.3)	.7 (.4)	.4 (.6)
Hard of hearing	1.0 (.4)	1.0 (.4)	1.0 (.4)	1.0 (.3)	1.1 (.5)	.6 (.6)
Deaf	.4 (.2)	.5 (.3)	.5 (.3)	.5 (.2)	.6 (.3)	.2 (.4)
Orthopedically impaired	1.2 (.4)	1.2 (.4)	1.2 (.4)	1.2 (.4)	1.3 (.5)	1.1 (.9)
Other health impaired	1.3 (.4)	1.3 (.4)	1.3 (.4)	1.1 (.4)	1.3 (.5)	1.6 (1.0)
Multiply handicapped	.6 (.3)	.7 (.3)	.5 (.3)	.6 (.3)	.6 (.4)	4.2 (1.7)
Deaf/blind	<.1 (.1)	<.1 (.1)	<.1 (.1)	<.1 (.1)	<.1 (.1)	.4 (.5)
Average age in years	15.1 (<.1)	16.1 (<.1)	17.1 (<.1)	18.1 (<.1)	na	18.5 (.2)
Gender (percent)						
Male	68.3 (1.7)	67.8 (1.8)	68.8 (1.8)	68.8 (1.6)	67.6 (2.1)	66.9 (4.0)
Female	31.7 (1.7)	32.2 (1.8)	31.2 (1.8)	31.2 (1.6)	32.4 (2.1)	33.1 (4.0)
Ethnic background (percent)						
White	67.4 (1.9)	68.5 (1.9)	71.4 (1.9)	71.4 (1.7)	71.9 (2.1)	53.5 (4.5)
African American	22.4 (1.7)	21.9 (1.7)	19.6 (1.6)	19.7 (1.5)	19.4 (1.9)	24.3 (3.9)
Hispanic	7.7 (1.1)	7.1 (1.1)	6.6 (1.0)	6.2 (.9)	6.4 (1.2)	17.3 (3.4)
Percentage with annual household income of:						
Less than $12,000	24.3 (1.8)	23.8 (1.9)	23.4 (1.9)	21.6 (1.7)	21.5 (2.1)	24.4 (4.3)
$12,000 - $24,999	23.4 (1.8)	22.6 (1.8)	22.6 (1.8)	22.2 (1.7)	22.7 (2.1)	44.4 (4.9)
$25,000 or more	52.3 (2.1)	53.6 (2.2)	54.0 (2.2)	56.3 (2.0)	55.8 (2.5)	31.1 (4.6)
n	2,979	2,860	2,774	3,282	2,191	483

Standard errors are in parentheses.

Many analyses presented in this report use the sample of students with complete data for grade levels 9 through 12. The characteristics of these students are also shown in Table 2-2. Not surprisingly, the disability and demographic characteristics of these students most closely resemble those of 12th-graders. As noted above, these students did not represent the population of secondary students with disabilities because of the students who dropped out; rather they represented the population of students who stayed in secondary school for 4 years. This sample was used when it was more appropriate for the question being addressed or when it simplified the presentation because there were no grade level differences. As reported in Chapter 4, there were no differences between drop outs and those who went on to the next grade level in their participation in regular education; thus the sample with complete data for grades 9 through 12 did not differ from the grade level samples on the variable of most interest in this report.

Analyses of Regular Education Participation

As described in Chapter 3, several different measures of regular education participation were computed in NLTS analyses, using data collected during both of the major data collections. During the 1987 data collection, students' school records for the most recent year in school were abstracted by a local data collector. The most recent year in school was either 1985-86 or 1986-87. A percentage of time in regular education was then computed on the basis of that most recent year.

During the 1990 data collection, student transcripts were collected for all youth who attended secondary school after the 1986-87 school year. Not all students had complete transcripts for 4 years for various reasons (e.g., they had not finished school yet). Students who left school before 1986-87 had no transcript data because they had been out of school too long before the data collection.

Many students with the most severe disabilities had no transcripts because schools did not use transcripts to record their programs. A school program content form was completed for these students. School program content forms recorded the percentage of time a student spent in various content areas in the most recent year in school. All courses were assumed to be special education courses.

Any student course data available through the 1987 data collection that were not available through the 1990 collection were added to the database to produce the most complete student course database possible. The resulting sample sizes are shown in Table 2-2.

Time in regular education was derived by computing the number of hours spent per week in regular education courses. If only credit hours were given on the transcript, one credit hour was assumed to equal one clock hour per day, assuming a total of 30 hours per week in school. The percentage of time in regular education was computed by dividing time in regular education courses by the total time in school. Throughout this report, time in regular education is used, rather than the number of credits earned. As we will see, many students failed one or more courses, resulting in no credit. The critical policy issue for regular education is where students are being educated, that is, where they are spending their time. How they perform in those settings is a related issue, which is also addressed in this report.

A percentage of time in regular education was computed separately for each grade level, for those not assigned to grade levels, and for grades 9 through 12 combined, which included those who were not assigned to grade levels. Even though the data for students not at grade levels were only for 1 year, it was felt that their participation in regular education varied so little from year to year that it could safely be projected across 4 years. In fact, participation in regular education varied little for most students, with correlations for participation in regular education across grade levels ranging from .61 (grade 9 to grade 12) to .84 (grade 11 to grade 12).

The two calculations of time in regular education resulting from the two data collections (i.e., 1987 and 1990) and the two data collection techniques (most recent year in school and all available transcript information) produced somewhat different findings for time in regular education. The 1987 data collection found an average overall time in regular education of 56% (n = 4,227). The 1990 data collection found averages of 67%, 67%, 68%, and 70% for 9th, 10th, 11th, and 12th grades (n = 2,784 to 3,287) and 69% for those with 4 years of transcript data (n = 1,866). The 1987 data set consistently shows a lower participation rate across all disability groups. Some of these differences between the findings could be due to the inclusion of 7th- and 8th-graders, along with students not at grade levels, in the earlier data. Both groups, however, made up small percentages of the overall 1987 group. Also, data on school years 1988 and 1989 were available on transcripts collected in the 1990 data collection; it is difficult to imagine that there would be a 10 percentage point shift in regular education participation in 2 years. The later set of figures is more comparable with the National High School Transcript Study (NHSTS), which found that students with disabilities earned 68% of their credits in regular education (Hayward and Thorne, 1990). The NHSTS, however, did not include the full range of students with disabilities.

We use both data sets in this report to address questions about the relationship between time in regular education and other factors. Each data set is better suited to answer some questions, and either data set could answer others. During the 1987 data collection, for example, most of the youth in the study were still in secondary school. Issues related to high school experiences, such as having friends or joining groups, are best answered with these data. Questions about the relationship between time in regular education and failing grades could be answered by either data set. We have opted to use the 1990 data for the participation rates in regular education because they are more current. Otherwise, we generally opted not to re-run analyses for questions that were previously answered with the 1987 data set.

Period Effects

In longitudinal research, such as the NLTS, it is possible that external factors that occur as time passes can influence findings, independent of issues addressed in the study. These external influences on data are referred to as period effects—differences between sample members at different time points that result from the difference in time points, not from real changes in the circumstances of the sample members. One example of a period effect would result from a change in the minimum wage rate over the course of a study that could be interpreted as an improvement in the quality of the job held by an individual, rather than to an across-the-board change in wage that reflected nothing about a real job change.

The issue of period effects is germane to this report because the mid to late 1980s were years of active reform in education. Some, although not the majority, of schools and school programs were changing in an effort to improve student performance. It is possible, then, that school reforms could result in the school program experiences of 11th-graders in 1985, for example, being substantially different from the programs of 11th-graders in 1989. Because we have combined data for a grade level, regardless of the calendar year in which a student experienced that grade level, these differences would be masked and could potentially lead to misrepresentation of school experiences.

We investigated this issue for a series of school program variables in the manner depicted in Figure 2-1. In general, there was no consistent pattern or trend in changes in program factors associated with calendar year. For example, participation in regular occupational vocational education remained unchanged for 9th- and 10th-graders from 1984 through 1989. Thus, throughout this report, we aggregate data from a grade level, regardless of the year in which they occurred.

Student School Program Survey Analyses

The teacher-reported data from the NLTS student school program survey allows the exploration of a range of critical areas inaccessible through analyses of transcripts. In Chapters 3 and 4 of this report, we present findings regarding teacher expectations of student performance, as well as students' behavior in different settings. An important consideration with these data, however, is that they focus largely on 12th-graders or students not assigned to grade levels. These students are likely to be different from students in the earlier grades, a proportion of whom would be dropouts.

With this background information on the sample, the data, and the analytic approach in mind, we turn now to the task of describing the role of regular education for students with disabilities.

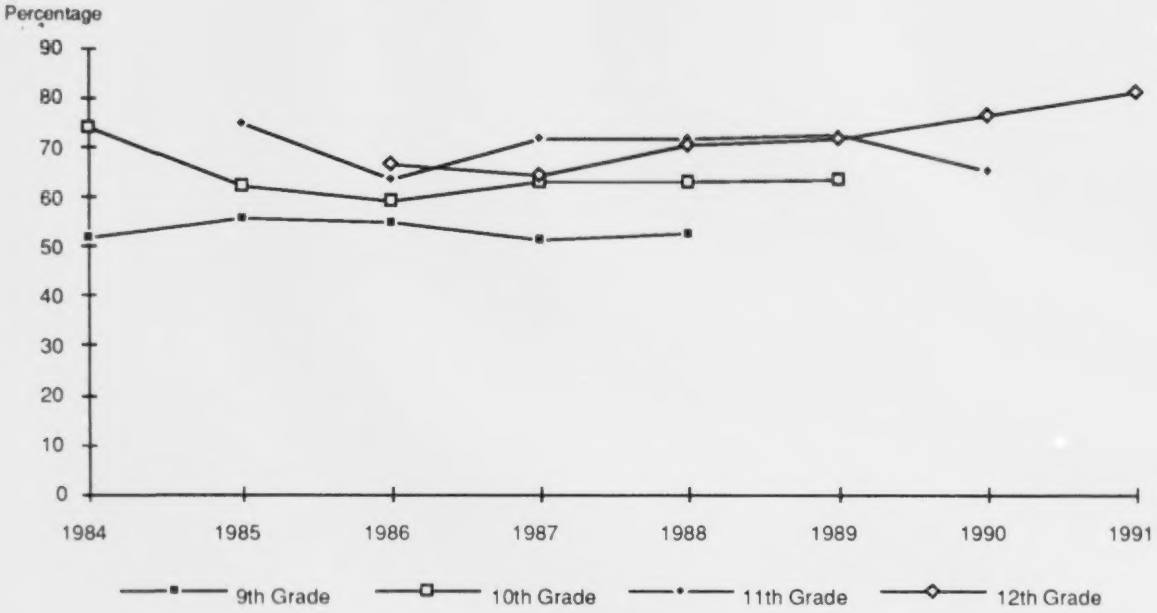


FIGURE 2-1 PARTICIPATION IN OCCUPATIONAL VOCATIONAL EDUCATION IN REGULAR EDUCATION SETTINGS, BY CALENDAR YEAR AND GRADE LEVEL

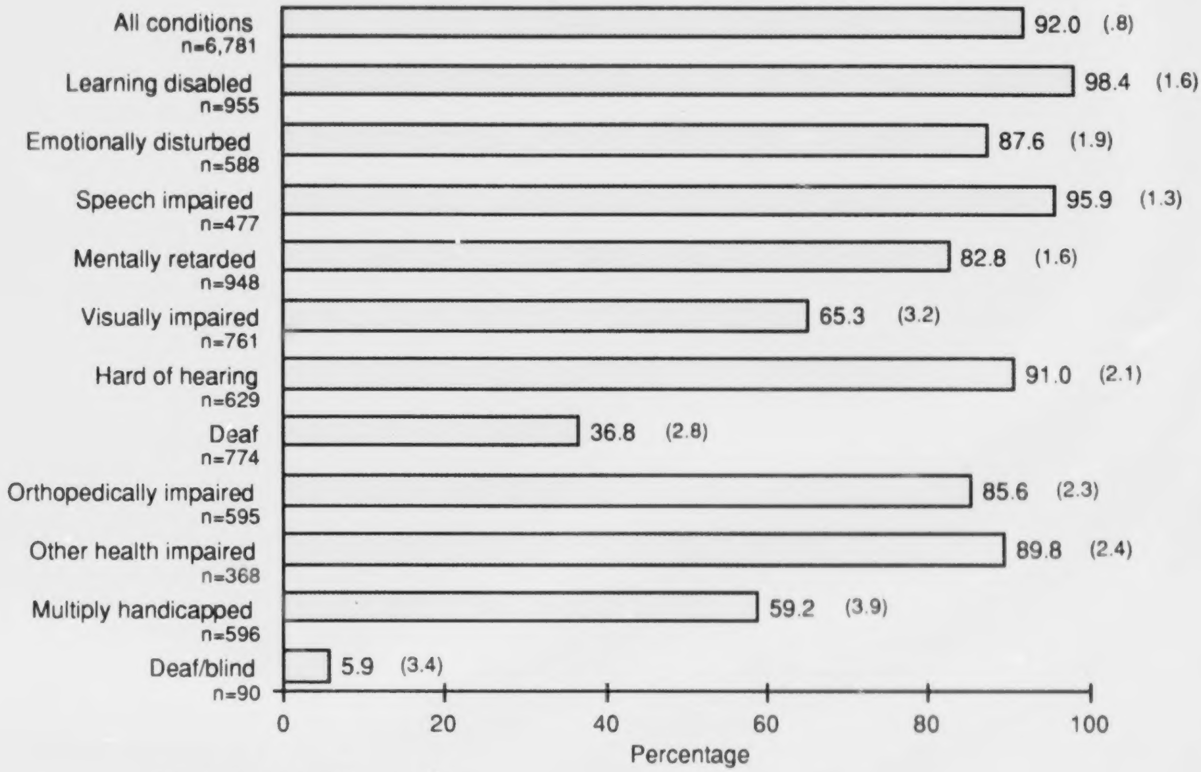
3 REGULAR EDUCATION IN SECONDARY SCHOOL

For most adolescents in this country, education at the secondary level is made up of a finite number of courses taken over approximately 4 years. Like so many tiles in a mosaic, credits accumulate year after year, forming what is hoped to be a meaningful educational program, the ultimate outcome being a well-educated young adult. Whether the mosaic of high school course work does indeed form a meaningful pattern or remains simply a set of many unrelated pieces has been the subject of much discussion, especially over the past decade. Patterned or not, there are commonalities and themes to the mosaic. State requirements in core courses constitute some portion of high school coursework. Students headed for college take many academic courses; students not likely to further their education fill in the spaces with vocational or general courses. Students with disabilities add yet another element to their mosaic; none, some, or all of their classes may be special education courses provided solely for students with disabilities.

In this chapter, we examine the relative contributions of regular and special education to the secondary programs of students with disabilities. We begin by looking at the proportion of students with disabilities who attended comprehensive high schools and, conversely, the proportion who fell completely under the purview of special education through their attendance at special schools. Next we look at the role of regular education in the high school programs of students with disabilities in comprehensive high schools, examining issues such as who took regular education courses and how much and what coursework they took. We further explore the question of who was in regular education courses by examining the demographic, school, and community factors that were associated with the amount of time students spent in regular education. The chapter closes with a description of some of the ways in which regular education differed from special education and the kinds of supports regular education teachers had available to them when they had special education students in their classes.

Regular and Special Schools

One important educational factor for youth with disabilities that controls their opportunities for participation in regular education courses is whether they attended a regular or special school. Although, overall, the great majority of students with disabilities attended regular comprehensive high schools, this was not true for students with some of the low-incidence disabilities (see Figure 3-1). Nearly all students with deaf/blindness attended special schools, as did the majority of students who were deaf. Two out of five secondary students with multiple handicaps attended special schools as did one-third of students with visual impairments. On the other hand, nearly all students with learning disabilities and speech



Standard errors are in parentheses.
Source: 1987 Survey of Secondary Education Programs or 1987 school record abstract.

FIGURE 3-1 YOUTH WITH DISABILITIES WHO ATTENDED REGULAR SECONDARY SCHOOLS, BY DISABILITY CATEGORY

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impairments attended regular high schools. Other groups with high proportions of students in regular high schools were those who were hard of hearing or who had other health impairments or serious emotional disturbances.

Many of the analyses presented in this report focus exclusively on students who attended regular high schools, because they had the opportunity to participate in regular education. For selected analyses, we also included students in special schools to provide a complete picture for the disability groups that were highly represented in these settings. For the analyses in which they were included, we assumed that students in special schools did not participate in regular education classes. We are aware that some special schools had arrangements whereby their students spent some time on regular campuses, but it was not feasible to collect data on this arrangement for every course for every student in a special school. To the extent that students had such arrangements, findings underestimate the extent of their participation in regular education in analyses that include special school students.

Participation in Regular Education in Regular High Schools

One way to assess an educational experience is to look at time spent in a given activity, although amount of time can be an overly narrow representation of an experience that misses important qualitative dimensions. However, a case can be made that time in regular education, in and of itself, is a meaningful measure of programs for students with disabilities. For proponents of full inclusion, time in regular education classes is seen as the embodiment of the normal high school experience. From this perspective, time in regular education is automatically available to the general student population, yet it remains an elusive goal that many students with disabilities must earn. Alternatively, regular education, particularly in academic classes, can be a hostile environment for some students with disabilities. Theoretically, a student with disabilities is to be bolstered in his or her attempts to cope with the cognitive demands of the regular classroom through adaptations, supports, and special education classes. Regardless of whether time in regular education is viewed as an opportunity or an obstacle, it certainly is an issue of grave concern to those interested in the education of students with disabilities.

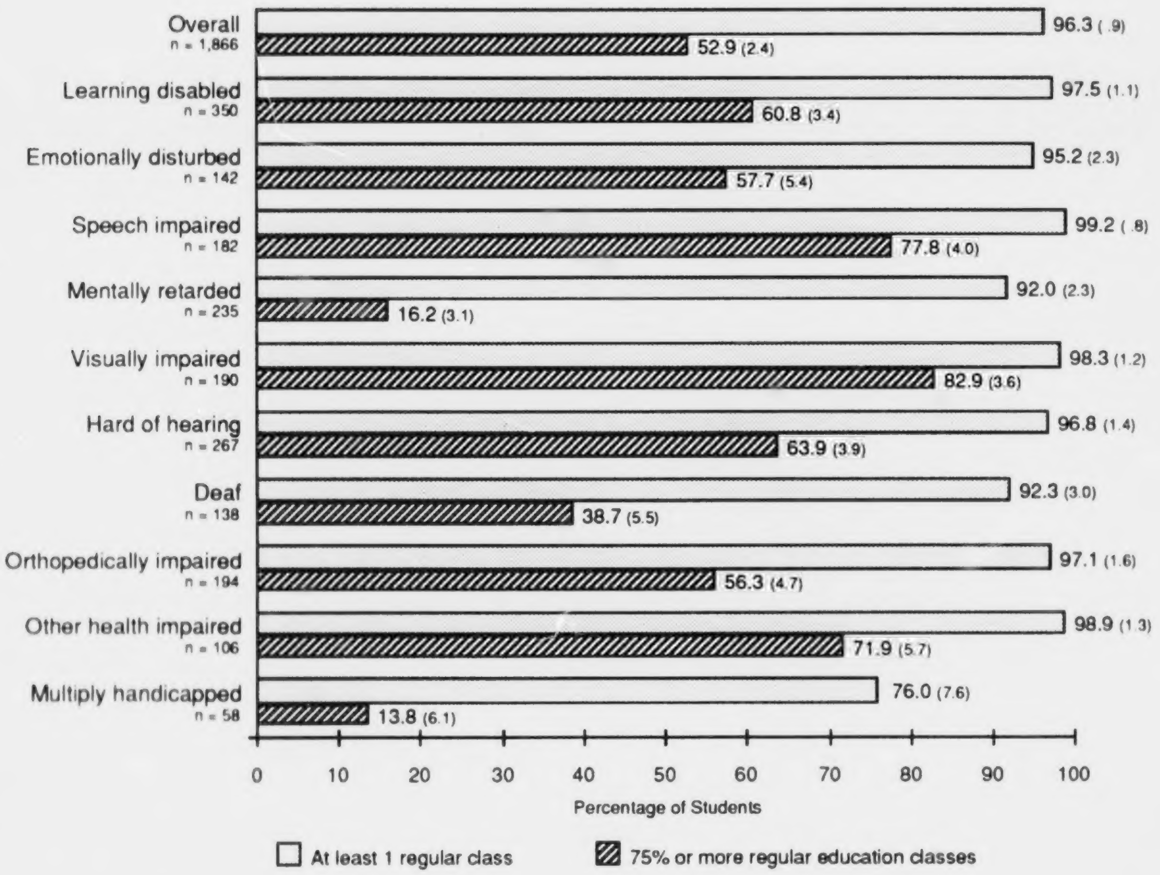
All analyses in this part of the chapter refer only to students with disabilities who attended regular high schools. After presenting these findings, we present some descriptive statistics on regular education participation that include students in special schools as well.

All Courses

Almost all students with disabilities attending regular high schools participated in regular education. The overwhelming majority of students in special education (96%) who progressed from grade level to grade level took at least one regular education course between grades 9 and 12. There were no differences for students at different grade levels in their likelihood of taking a regular education course.

For students not assigned to grade levels, the figure was considerably lower, with only 35% taking at least one regular education class. Students not assigned to grade levels had more severe disabilities and made up about 5% of the secondary students in special education in regular high schools.

To gauge the extensiveness of participation in regular education, we looked at the proportion of students who spent 75% or more of their time between grades 9 and 12 in regular education. Overall, by this criterion, about 53% of special education students participated extensively in regular education classes in high school. Figure 3-2 shows both the percentage of each disability group who took at least one course in regular education and those who spent 75% or more of their time in regular education classes. There were few differences between disability groups in the first measure, but there was considerable variation in the second. Nearly everyone participated at least a little; not everyone participated a lot.



Standard errors are in parentheses.
Source: 1990 student transcripts. Based on students assigned to grade levels in regular high schools with complete transcript data.

FIGURE 3-2 YOUTH WITH MINIMAL AND EXTENSIVE PARTICIPATION IN REGULAR EDUCATION CLASSES

The students least likely to have taken any regular education classes were those with multiple impairments, but even three-fourths of those students who were assigned to grade levels were in at least one regular education class during high school. For all other groups, more than 90% were enrolled in at least one class.

The students with disabilities most likely to have taken a substantial portion of their coursework in regular education were those with visual or speech impairments. About 83% of students with visual impairments spent three-quarters or more of their time in high school in regular education classes. For students with speech impairments, the figure was 78%. The three groups least likely to spend a substantial amount of time in regular education were students with deafness (39%), mental retardation (16%), or multiple impairments (14%).

Academic and Vocational Courses

Not all courses in secondary school are of equal difficulty, and not all courses are appropriate for all students. In this section, we examine the kind of regular education courses students with disabilities took. We focus our analyses on academic and vocational courses, those that make up the bulk of students' secondary school programs. Academic courses included English, social studies, math, science, and foreign language, as well as courses that supported these classes (e.g., study skills courses). Unfortunately, the level of information available from transcripts did not permit us to examine the difficulty level of most courses. Thus, remedial math and Algebra I were both classified simply as math courses. Vocational courses included prevocational courses (i.e., courses that focused on work-related skills or on preparation for occupational vocational classes) and occupational vocational courses such as marketing distributive education, trade and industry, or technical education.

Nearly all students with disabilities assigned to grade levels in regular high school took at least one academic course and one vocational courses in a regular education setting during high school.* Overall, 88% of students with disabilities assigned to grade levels took a regular academic course between grades 9 and 12; 93% took a vocational course. On the other hand, very few students with disabilities not assigned to grade levels took academic or vocational regular education classes. Only 9% of these students ever took a regular academic class, and only 13% ever took a regular vocational class. Graduates with disabilities, on the average, earned 70% of their total credits in regular education courses: 33% of the total credits were in regular academic courses, and 21% were in regular vocational courses (the rest were in other courses, such as life skills).

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* See Newman (1993) for an extensive discussion of participation in academic courses and Blackorby (1993) for a discussion of vocational courses.

Overall, students with disabilities averaged 69% of their total time in secondary school in regular education classes (Table 3-1). Students with visual impairments in regular high schools had the most time in regular education overall and the highest average percentage of time in regular academic classes (58%).** From other NLTS data, we know that students with visual impairments were among the most likely students with disabilities to continue their education after they graduated from high school (Marder, 1992). Clearly, their high school programs were laying the groundwork for this future course. Not surprisingly, the least time in regular academic classes was spent by students with mental retardation (14% of their time in classes during high school) or multiple impairments (13%).

Table 3-1

AVERAGE TIME IN REGULAR EDUCATION ACADEMIC AND VOCATIONAL COURSES

	Average Percentage of Time in Regular Education for:						
	Any Courses		Academic Courses		Vocational Courses		
	Mean†	S.E.	Mean	S.E.	Mean	S.E.	n
All conditions*	68.8	1.4	32.5	1.1	19.7	.6	1,866
Learning disabled	74.1	1.8	35.2	1.4	21.1	.9	350
Emotionally disturbed	72.0	3.2	38.4	2.3	18.5	1.3	142
Speech impaired	85.3	2.5	48.7	2.3	18.4	1.0	182
Mentally retarded	45.2	2.4	14.5	1.6	17.0	1.1	235
Visually impaired	86.9	2.2	57.5	2.0	12.9	1.0	190
Hard of hearing	75.5	2.3	42.8	1.9	17.1	.9	267
Deaf	59.2	3.5	30.3	2.6	15.0	1.2	138
Orthopedically impaired	67.9	3.3	42.1	2.6	13.1	1.0	194
Other health impaired	80.9	3.5	47.6	3.0	16.7	1.3	106
Multiply handicapped	33.9	5.8	12.6	3.1	10.9	2.3	58

Based on students assigned to grade levels in regular high schools with complete transcript data.

* "All conditions" includes students in each of the 11 federal disability categories. Percentages are reported separately only for categories with at least 25 students.

† The difference between time in any regular education course and the sum of the time in academic and vocational was the percentage of time spent in other courses (e.g., life skills).

Source: 1990 student transcripts.

** Readers should note that the percentage of time students spent in regular education academic or vocational classes was influenced both by whether they had taken that particular kind of class and whether the class was in a regular education setting.

Students with different disabilities differed considerably in their enrollment in regular academic classes, whereas there was less variation in time in regular vocational classes. The pattern across disability groups reflects the intended nonrandom nature of class assignments in secondary school for students with disabilities. Most regular education academic classes require an average level of intellectual functioning and a prerequisite skill or knowledge level. Some of these classes, therefore, were not appropriate for some students with cognitive impairments. Students with IQs below 75 predominated among those with mental retardation or multiple impairments (Wagner, 1992), which were the same groups who spent the least amount of time in regular academic classes. (We explore the relationship between ability and regular class placement in more detail below.) Vocational classes, on the other hand, appear to be deemed appropriate for a broader range of students with disabilities.

As noted above, considerably less variation was found across disabilities for the average time in regular vocational courses. Students with learning disabilities spent the most time in regular vocational classes, with an average of 21% of their course time between grades 9 and 12. Students with visual impairments, orthopedic impairments, or multiple impairments spent the least time in regular education (13% or less).

A Look across Types of Schools and Programs

In understanding the role of regular education in the school programs of students with disabilities, it is important to keep sight of the very different educational trajectories followed by different students. We have noted that a small group of students with disabilities in regular schools, those with the most severe impairments, were not assigned to grade levels and that their participation in regular education was considerably less than that of their classmates who followed a grade-level progression. Other students were in special schools.

The following analysis was computed to provide data on regular education participation for all students with disabilities, including those not assigned to grade levels and those in special schools.* The course-taking data for students not assigned to grade levels are based on 1 year, whereas data for the other students are for 4 years. Because there were no grade-level differences with regard to regular education participation, extrapolating 4 years from 1 year for students not assigned to grade levels was justified. As mentioned previously, we assumed for purposes of the analysis that students in special schools did not participate in regular education.

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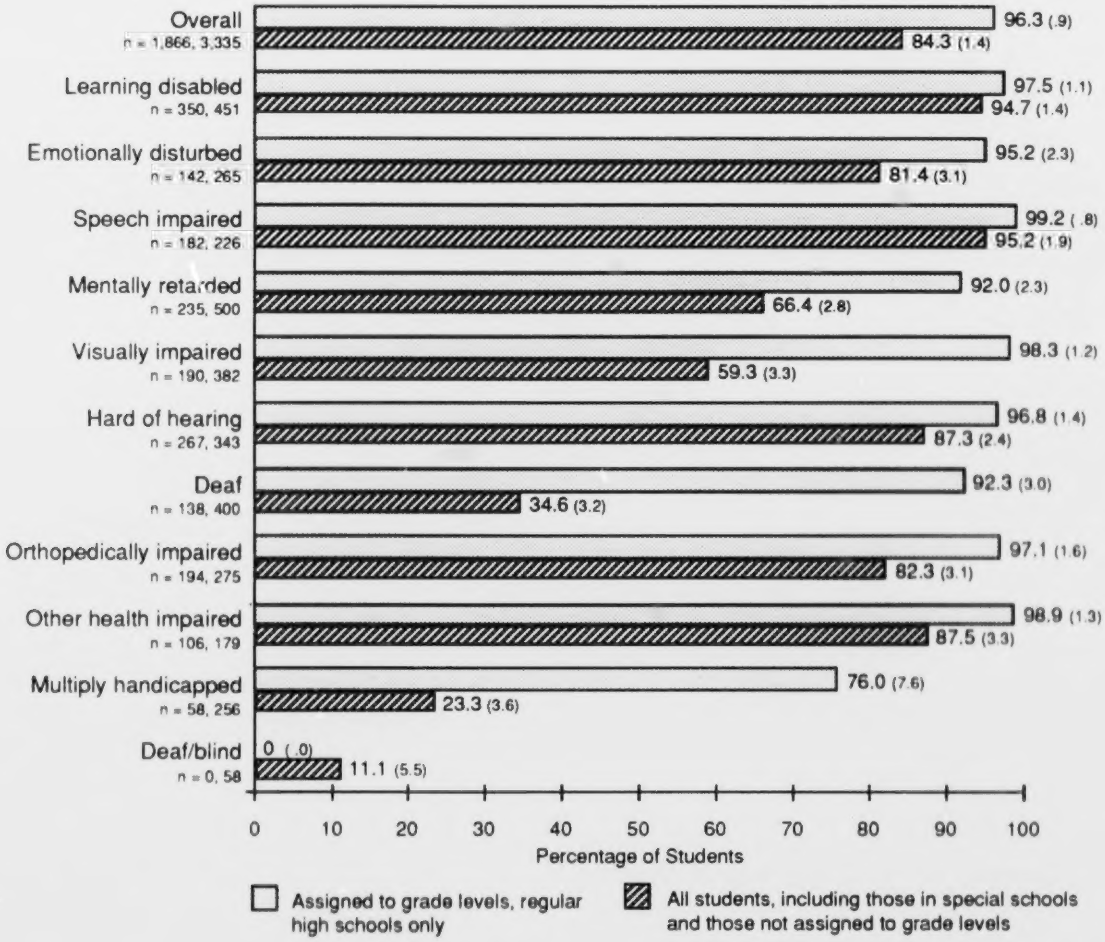
* Data for students who dropped out are not included because they did not complete grade 12. However, the absence of grade-level differences in regular education participation strongly suggests that if students who dropped out could have been included, the findings would be substantially the same.

Figure 3-3 shows the percentage of all students with disabilities who took at least one regular education course during secondary school. The data for students assigned to grade levels in regular schools are shown separately from the data for all secondary students with disabilities. Overall, 84% of all students with disabilities took at least one regular education course during secondary school. The highest participation rates were for students with learning disabilities or speech impairment; both groups had 95% participation rates. The lowest participation rates were found for students with deaf/blindness (11%), multiple handicaps (23%), or deafness (35%), because of their high rates of attendance at special schools.



For students assigned to grade levels, based on data over grades 9-12. For students not assigned to grade levels, based on most recent year in school. Special school students were assumed to have no participation in regular education. Standard errors are in parentheses.
Sources: 1990 student transcripts and 1990 School Program Content Form.

FIGURE 3-3 YOUTH WHO TOOK AT LEAST ONE REGULAR EDUCATION CLASS

The biggest contrast between students assigned to grade levels in regular high schools and all students with disabilities occurred for students with visual impairments, deafness, or multiple handicaps—the groups most represented in special schools. When students with these disabilities were assigned to grade levels in a regular high school, they had a high likelihood of taking a regular education class. For instance, 98% of students with visual impairments assigned to grade levels in a regular high school took at least one regular education class (they averaged 83% of their time in regular education over 4 years). Across all students with visual impairments, including those in special schools and those not assigned to grade levels, we find that only 59% took at least one regular education class.

Some, but not all, of these differences in placement reflect level of functioning. Although the ability levels of students in special schools were lower on the average than those of regular school students with the same disabilities, both high- and-low functioning students were found in both settings. Thirty-five percent of visually impaired students in special schools had IQs below 75; the figure for regular schools was 21%. Fifty-four percent of students with deafness in regular schools were rated high on a scale of functional mental skills; the figure for special schools was 40%. Ten percent of students with multiple handicaps in special schools were rated high on the functional mental skill scale, compared with 17% in regular schools (Wagner, 1991a). These data suggest that at least some of the students with disabilities in special schools would have taken regular education courses if they had attended regular high schools.

Who Took Regular Education?

We have seen that there were differences regarding which students with disabilities took regular education classes. These differences were related to the nature of the student's disability, and yet variations in regular education participation existed **within** each disability category. In this section of the chapter, we go beyond disability to examine some other factors hypothesized to be related to participation in regular education. These factors are derived from the conceptual framework presented in Chapter 1. We first look separately at variations in time in regular education by selected individual, household, and school characteristics. However, we recognize that these bivariate relationships are confounded by the interrelationships between them. For example, we know that there are more males than females among students with learning disabilities and that students classified as learning disabled spent more time in regular education. If we were to find that males spent more time in regular education, we would not know whether their gender or their predominance among those with learning disabilities accounted for the differences in placement. Thus, we use multivariate statistical analyses to explore the complexities of these interrelated factors and their relationships to the amount of time students spent in regular education classes.

Student Abilities

One of the most reasonable explanations for variation in the extent to which students with disabilities were in regular education classes is their ability to do the work required there. The NLTS does not have a direct measure of student ability to meet the expectations of specific classes, but we do have several measures of a student's general capabilities, including:

- **IQ,** collected in 1987 as part of the school record abstract.
- **Reading level,** collected in 1990 through the student school program survey for a subset of students who were mostly 12th-graders (see Chapter 2 for more information).
- **Math level,** collected along with reading level.
- **Functional mental skills,** measured through the 1987 parent interview. This scale consists of four tasks, each assessed on a 4-point scale: looking up phone numbers and using the phone; telling time on a clock with hands; reading/understanding common signs; and counting change. See Marder and Cox (1991) for details.
- **Self-care skills,** measured through the 1987 parent interviews. This scale consists of four tasks, each assessed on a 4-point scale: feeding oneself, dressing oneself, and getting around outside the house.
- **Community living skills,** measured through the 1990 parent interviews. This scale consists of four tasks, each assessed on a 4-point scale: going to the library or community pool; using public transportation to get around town; buying his/her own clothes at a store; and arranging a plane or train trip to go out of town.

Not all measures were available or were collected for all students, as reflected in the different sample sizes for these data.

As shown in Table 3-2, students with higher ability and skill levels averaged more time in regular academic education courses. However, ability level was not so directly tied to participation in regular vocational courses. Students with IQs above 90 averaged 41% of their time between grades 9 and 12 in regular academic classes, compared with 15% for those with IQs below 75 ($p<.001$). Similarly, those who were reading on grade level to 2 years below averaged 46% time in academic regular education, compared with 21% for those whose reading level was more than 2 years below grade level ($p<.001$). This relationship held for the other measures as well, with the exception of self-care skills. A lack of the physical abilities needed for self-care would not preclude one from succeeding in a regular education course; indeed, these skills appeared not to have entered into decisions about placement in regular education academic courses.

The picture for regular vocational education appears a bit more complicated because of the elective nature of vocational courses. Students with higher IQs spent more time in regular vocational courses (23% vs. 14%; $p<.001$). Reading and math levels and functional mental

Table 3-2

ABILITY LEVEL AND REGULAR EDUCATION PARTICIPATION

	Average Percentage of Time in Regular Education for:			
	Any Courses	Academic Courses	Vocational Courses	n
Overall	68.8	32.5	19.7	1,866
	(1.4)	(1.1)	(.6)	
IQ				
< 75	43.1	15.3	14.3	282
	(3.0)	(1.9)	(1.3)	
75-90	68.9	30.2	21.5	378
	(2.5)	(2.0)	(1.2)	
> 90	82.5	41.3	22.9	381
	(2.1)	(2.1)	(1.3)	
Reading level				
More than 2 years below grade level	59.7	21.2	21.5	179
	(3.0)	(2.1)	(1.5)	
On/above grade level to 2 years below	82.1	45.6	19.2	149
	(3.4)	(2.6)	(1.7)	
Math level				
More than 2 years below grade level	54.4	18.4	19.8	167
	(3.1)	(2.1)	(1.6)	
On/above grade level to 2 years below	86.1	46.1	21.3	161
	(2.5)	(2.2)	(1.5)	
Functional mental skills				
Low (4-8)	48.1	21.1	18.0	48
	(12.7)	(7.6)	(5.9)	
Medium (9-14)	62.2	27.5	17.5	604
	(2.7)	(1.9)	(1.1)	
High (15-16)	75.4	37.5	20.7	950
	(1.7)	(1.5)	(0.8)	
Self-care ability				
Low (4-6)	79.4	48.3	15.5	43
	(15.4)	(10.3)	(4.6)	
Medium (8-10)	36.8	19.9	7.9	133
	(8.7)	(6.3)	(2.6)	
High (11-12)	71.1	33.7	20.1	1460
	(1.5)	(1.2)	(0.7)	
Community living skills				
Low (4-6)	50.2	27.4	11.9	45
	(11.5)	(8.2)	(3.6)	
Medium low (7-11)	46.7	17.9	15.2	205
	(5.4)	(3.4)	(2.2)	
Medium high (12-15)	68.9	31.5	18.8	516
	(2.6)	(2.1)	(1.2)	
High (16)	78.5	38.3	22.6	539
	(2.0)	(1.7)	(1.0)	

Standard errors are in parentheses.

Sources: 1990 student transcripts; 1987 school record abstract, student school program survey; 1987 and 1990 parent interviews.

skills, on the other hand, bore no relationship to time in regular vocational courses, in part because higher-functioning youth did not elect vocational courses as frequently as other students. Community living skills were related (23% time in regular vocational courses for those with high skills, compared with 12% for those with low; $p<.01$).

Two more questions were asked to further explore the relationship between skill and regular education placement:

- What was the skill level of the high participants (i.e., those who spent 75% or more of their time in regular education), compared with the low participants?
- Were there students with low skill levels who were high participants or students with high skill levels who were not?

An examination of the ability levels of high participants and low participants substantiates the finding that students with higher skill levels spent more time in regular education. Not all high participants, however, were students with high skill levels. Conversely, not all students with higher skill levels spent three-fourths or more of their time in regular education courses.

The average IQ of the high participants was 92, although 9% of the participants had IQs below 75 (see Table 3-3). On the other hand, 18% of low participants had IQs over 90. The average high participant was 1.5 years behind his/her grade level in reading and 1.1 years behind in math. However, 38% were more than 2 years below in reading and 28% were more than 2 years behind in math. On the other hand, 20% of low participants were within 2 years of reading at grade level. Similarly, more high participants than low participants had high functional skills, although 27% of high participants were lower-scoring youth. In sum, although time in regular education was associated with ability level, there were students with relatively low abilities who spent more than 75% of their high school classes in regular education and students of higher ability who did not.

Student and Household Characteristics

Educational research has repeatedly found that student characteristics other than ability are related to students' programs and outcomes. These include gender, ethnic background, household education and income level, and family structure. When examined in light of regular education participation, however, most of these factors bore no bivariate relationship to how much time students with disabilities spent in regular education. There were no statistically significant differences in overall, academic, or vocational regular education participation across 4 years of high school for students of different genders or ethnic backgrounds. Nor were there differences between students from single- or two-parent households, or from those in which the heads were or were not high school graduates.

Table 3-3

ABILITIES OF HIGH AND LOW REGULAR EDUCATION PARTICIPANTS

	High Participants (75-100%)	Low Participants (0-74%)
Percentage with IQ:		
< 75	8.6	41.4
	(2.5)	(4.0)
75-90	41.5	40.2
	(4.3)	(4.0)
> 90	49.9	18.4
	(4.4)	(3.1)
Average IQ	91.8	78.0
	(1.2)	(1.2)
n	494	547
Percentage with reading level:		
More than 2 years below grade level	38.1	79.5
	(5.8)	(4.9)
On or above grade level to 2 years below	61.9	20.5
	(5.8)	(4.9)
Percentage with math level:		
More than 2 years below grade level	28.1	81.7
	(5.4)	(4.7)
On or above grade level to 2 years below	71.9	18.3
	(2.5)	(2.2)
n	171	157
Percentage with functional mental skills scores that were:		
Low (4-8)	1.0	1.6
	(.7)	(1.0)
Medium (9-14)	26.3	43.9
	(3.1)	(3.8)
High (15-16)	72.8	54.5
	(3.2)	(3.9)
n	932	670
Percentage with self-care skills scores that were:		
Low (4-6)	1.2	.4
	(.8)	(.5)
Medium (8-10)	1.2	5.1
	(.8)	(1.7)
High (11-12)	97.6	94.4
	(1.1)	(1.7)
n	951	685
Percentage with community living skills that were:		
Low (4-6)	.7	3.1
	(.7)	(1.5)
Medium low (7-11)	4.7	17.1
	(1.7)	(3.2)
Medium high (12-15)	32.7	38.2
	(3.7)	(4.2)
High (16)	61.8	41.6
	(3.8)	(4.2)
n	760	545

Standard errors are in parentheses.

Sources: 1987 school record abstract, student school program survey; 1987 and 1990 parent interviews; 1990 transcripts.

However, differences in regular education participation in general—and academic regular education participation in particular—were found for students from households of different income levels. As shown in the top graph in Figure 3-4, students from families making between $38,000 and $50,000 in 1987 averaged 82% time in regular education overall, compared with 63% for those making less than $12,000 ($p<.001$). Similarly, students from households earning $50,000 or more per year averaged 44% time in regular academic classes, compared with 29% for those with incomes less than $12,000 ($p<.01$). Participation in regular vocational education was not related to household income.

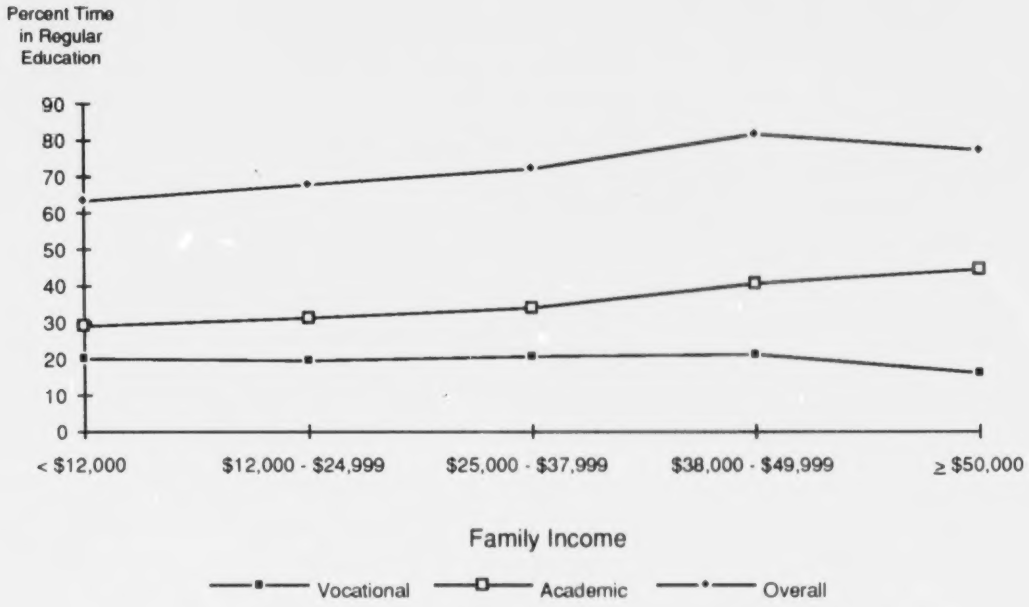
Several hypotheses could help to explain the relationship between household income and participation in regular education. One possibility is that youth with high skill levels, who had the highest participation rates in regular education, came from higher-income families. A second possibility is that higher-income families advocated more vigorously for regular education placements for their children. Lastly, students from higher-income families may have attended schools that placed students in regular education more extensively. All three hypotheses could have been operating simultaneously.

The first and third hypotheses will be addressed later in the chapter through multivariate analysis. Other evidence available through the NLTS is consistent with the advocacy hypothesis. For a subsample of students, teachers were asked to provide a rating of parental involvement in the student's secondary school experiences. The bottom half of Figure 3-4 shows the average time in regular education for different levels of parent involvement. Both for overall regular education and for regular academic courses, participation in regular education increased as parent involvement increased. Parental involvement could lead to increased regular education participation both directly, through advocacy, and indirectly, through the development of more competent students who were better suited to regular classrooms.

School and Community Characteristics

A number of other factors hypothesized as related to regular education participation were examined in previously reported NLTS analyses, including the type of community in which the school was located (urban, suburban, rural), the geographic region of the country, and a variety of school factors such as size, percentage of low-income students, and other supports available in the school. More detailed information about these factors can be found in Wagner (1991b).

The type of area in which a school was located could be related to the extent of regular education placement in that students in sparsely populated areas may have spent more time in regular education simply because there weren't enough other students with disabilities to offer



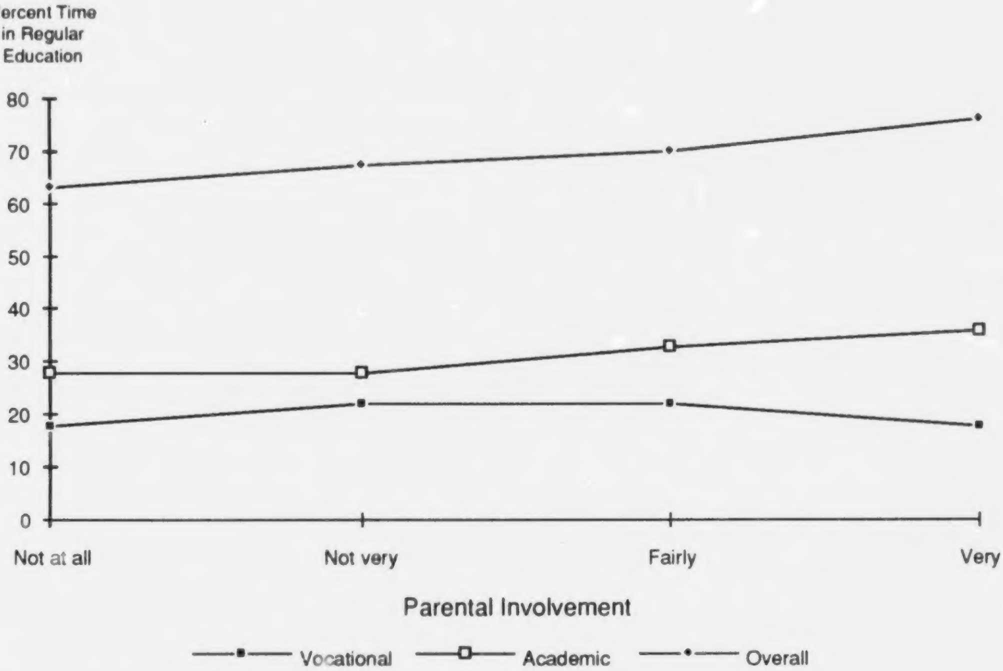


FIGURE 3-4 FAMILY FACTORS AND REGULAR EDUCATION PARTICIPATION

an extensive array of special education classes. Indeed, the data show that students in urban areas spent significantly less time in regular education, on the average, than students in suburban or rural areas (Table 3-4, 46% vs. 60%; p<.001).*

The relationship of regular education participation to region of the country was explored because previous research has shown that different parts of the country differ in their use of segregated placements (Danielson and Bellamy, 1989). If this pattern reflects differences in mind-set and history about the appropriateness of regular education for students with disabilities, regions of the country may also differ in the amount of time students in regular high schools spent in regular education classes. The data in Table 3-4 are consistent with this hypothesis.

Table 3-4

SCHOOL LOCATION AND REGULAR EDUCATION PARTICIPATION

School Location	Percentage of Time in Regular Education	S.E.	n
School was in:			
Urban area	46.3	2.4	1,466
Suburban area	60.2	1.9	1,503
Rural area	60.1	1.6	1,024
Region:			
New England	76.5	6.9	59
Middle Atlantic	50.3	3.1	441
South Atlantic	60.9	2.1	928
East North Central	57.0	2.5	777
East South Central	48.6	3.3	263
West North Central	72.5	3.7	220
West South Central	55.0	3.9	516
Mountain	50.1	4.0	421
Pacific	51.3	3.8	602

Source: Regions are as defined by the U.S. Census Bureau. Placement data are from students' school records for their most recent school year, 1987 school record abstract.

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* The data in Table 3-4 are from the 1987 data collection, which found a lower overall level of participation in regular education. This lower level was attributed to differences in the sample at the two time points, as was explained in Chapter 2. The 1987 data on regular education participation were used because the school factors described in this section were measured in 1987. The relationships between regular education participation and other factors were similar between the 1987 and 1990 data collections. The 1987 data on regular education participation were based on the student's most recent year in school.

Students in the New England and the West North Central regions spent the most time in regular education settings, 76% and 72%, on the average. Students in the Middle Atlantic, East South Central, and Mountain *regions averaged 50% or less time in regular* education classes (76% vs. 49%; p<.001).

A final set of factors explored for possible relationships with the amount of time in regular education consisted of variables related to school characteristics and policies. These data on school characteristics were collected through a survey of all schools attended by students at the time of the 1987 data collection. The school factors examined include:

- **School size**. Following the same logic presented earlier with regard to rural versus urban schools, schools with fewer students with disabilities may have offered fewer special education classes; therefore, students with disabilities would have spent more time in regular education. The data in Table 3-5 offer support for this hypothesis. Students attending schools with more than 1,100 students averaged 51% of their time in regular education, compared with 66% for students in schools with fewer than 500 students (p<.001).

- **Low-income student enrollment.** Schools with large numbers of low-income students may have had fewer resources than schools with a wealthier student population and therefore may have had fewer special education classes. If this was the case, we would expect to see students in these schools with larger amounts of time in regular education. On the other hand, we have already seen that household income was related to time in regular education. This would suggest that students in schools with higher percentages of low-income students would have spent less time in regular education. The data indicate that students who attended schools with high concentrations of students in poverty spent less time in regular education. Students who attended schools with more than half enrollment from low-income families spent 50% of their time, on the average, in regular education. When less than 10% of the student body was low-income, time in regular education averaged 63% (p<.001).

- **Availability of other programs in the school for students with learning problems.** Schools were asked about the types of compensatory education programs available, such as Chapter 1 or bilingual education programs. Possibly, students in schools with a variety of programming options for students with special needs would have spent more time in regular education classes. The data show no relationship between attending a school with compensatory education programs and spending time in regular education.

- **Support offered to regular education teachers when students with disabilities are in their classes.** Schools were asked whether students with disabilities were expected to keep up in regular education and which of several possible supports were provided to the regular classroom teachers when students were mainstreamed into their classes. Provision of supports to regular classroom teachers might indicate a philosophical acceptance of students with disabilities in regular classes, and thus we would expect to see higher percentages of time in regular education in these schools. Students in schools with supports were found

Table 3-5

SCHOOL FACTORS AND REGULAR EDUCATION

	Time in Regular Education		
School Factors	Percent	S.E.	n
Average daily student attendance			
< 500 students	66.4	2.2	535
500 to 1,100 students	56.5	1.7	1,440
> 1,100 students	51.3	2.1	1,890
Proportion of students from low-income families			
Less than 10%	62.7	2.5	903
10% to 25%	56.8	2.0	1,298
26% to 50%	56.0	2.2	966
More than 50%	50.2	2.6	653
Compensatory education programs available			
Yes	56.3	1.3	3,321
No	59.2	2.8	593
Mainstreamed students were expected to keep up with regular education classes without help			
Yes	53.6	2.2	1,202
No	58.8	1.5	2,165
Schools reported that teachers with mainstreamed students were routinely provided:			
Special materials for mainstreamed students			
Yes	58.8	1.6	2,011
No	54.8	1.9	1,350
In-service training on mainstreaming			
Yes	60.7	1.8	1,549
No	54.2	1.7	1,812
Aides in the classroom			
Yes	60.2	2.3	1,305
No	55.7	1.5	2,056
Reduced class size/student load			
Yes	63.6	3.0	465
No	56.1	1.3	2,896
Student took:			
Vocational education			
Yes	57.3	1.2	3,246
No	52.2	2.6	981
Nonacademic courses			
Yes	57.1	1.2	3,572
No	50.6	2.9	655

Sources: Survey of Secondary Special Education Programs and 1987 school record abstract.

to be slightly more likely to be in regular education. For instance, students in schools where teachers were provided with in-service training on mainstreaming were in regular education an average of 61% of the time, compared with 54% in schools where teachers were not ($p<.01$). Students in schools where teachers were given a smaller class size when they had students with disabilities averaged 64% time in regular education, compared with 56% in schools where they were not ($p<.05$).

- **Courses taken.** To examine the relationship between courses and regular education participation, we asked whether students who took vocational or nonacademic courses were more likely to be in regular education. No differences were found for vocational courses (although differences were found with the multivariate model, as explained in the next section). Students who took at least one nonacademic course had a higher average percentage of time in regular education, compared with those who did not (57% to 51%, $p<.05$).

A Multivariate Analysis of Factors Related to Time in Regular Education Courses

We conducted a multivariate linear regression analysis to identify the factors that were significantly related to the percentage of time students spent in regular education in their most recent year in school. The multivariate analysis allows for the identification of factors related to regular education participation, with the effects of other factors held constant. It can address questions such as the relationship between household income and time in regular education for students of the same disability, same functional skill level, and same demographic and school characteristics. The 1987 data were used for the multivariate model (see Wagner, 1991b for more information).

The set of factors identified in the model explained more than one-third of the variation in time in regular education for students with disabilities in regular high schools ($r^2 = .38$). As expected, most of the difference between students in the amount of time they spent in regular education was explained by disability-related factors. Differences in disability-related characteristics explained 34% of the variation in percentage of time in regular education. This is consistent with law and policy, in that it indicates that most of the differences between students were not due to extraneous factors, such as ethnic background or school size, but rather to educationally relevant characteristics, such as the nature of the disability or the student's IQ. Another 2% of the variation was explained by demographic characteristics and 2% by school-related factors.

It should be noted that the majority of the variance in regular education participation by students with disabilities was not explained by the model. The unexplained variance was most probably due to the nature of the measures available in the study. The measures of student capabilities were rather general and did not adequately capture the multiple dimensions of individual differences. For instance, students with learning disabilities differed significantly among themselves, and not all of those differences were captured by IQ or their functional skills score. These individual characteristics, along with other community- and school-related characteristics for which we had no data, are most likely responsible for the unexplained variation.

The amount of unexplained variance in who takes regular education presents a problem for interpreting some of the findings presented later in the report. In subsequent analyses, we will look at the association between regular education and other components of the conceptual model. We already know that the highest-functioning students take more regular education, and thus, in the absence of statistical controls, we can expect to find better outcomes for those with more time in regular education. The critical question is, what is the relationship between time in regular education and other factors **independent** of student differences? If we have not measured all the dimensions of student functioning that relate to time in regular education, we cannot completely separate the variance in outcomes due to student differences from the variance due to time in regular education. What looks like a relationship between regular education and a positive outcome may really be a reflection of higher-functioning students' achieving better outcomes. This means that we will not be able to conclude unequivocally that regular education brought about the outcome. We refer to this as the problem of "unmeasured student characteristics" and will identify it as such wherever it is relevant.

Table 3-6 shows the estimated change in time in regular education that was found to relate independently to each of the variables in the model. For the disability categories, all students were compared with students with learning disabilities. The data indicate that students with speech or visual impairments spent 17 and 23 percentage points, respectively, more time in regular education courses than students with learning disabilities when all other differences in the model between the groups were controlled. Deaf students of similar characteristics averaged 15 percentage points less time in regular education than those with learning disabilities.

Functional mental skills, self-care skills, and IQ also were related to time in regular education, over and above the disability categories. For each of these measures, those with higher scores spent more time in regular classes. Independent of other factors, students who scored at the highest level on the functional mental skills scale were estimated to spend 15 percentage points more time in regular education than those who scored a 10 on this 16-point scale. The findings for IQ suggest that students with IQs of 100 spent 9 percentage points more time in regular education than those with IQs of 80, all other factors being equal.

Most of the demographic factors examined by the model showed no relationship to regular education, with other factors controlled. The three factors that were related were the student's age in his/her most recent year in school, household income, and region of the country. Regardless of disability and other factors, younger students spent more time in regular education than older students ($p<.05$). This finding is difficult to explain in light of the NLTS analysis of the 1990 transcript data, which found no differences between grades 9 to 12 in the average amount of time students were in regular education.

Table 3-6

ESTIMATED CHANGE IN PERCENTAGE OF TIME SPENT IN REGULAR EDUCATION CLASSES

Independent Variable	Estimated Percentage Points Change in Time Spent in Regular Education for Each Unit Change in the Independent Variable
Disability-related characteristics	
Youth classified as the following (rather than learning disabled):	
Emotionally disturbed	-3.66
Speech impaired	16.63***
Mildly/moderately mentally retarded	-13.01***
Deaf	-14.97***
Hard of hearing	5.28*
Visually impaired	22.60***
Orthopedically impaired	-2.25
Other health impaired	5.11
Severely impaired (SMR, multiply handicapped)	-11.34***
Functional mental skills scale	2.57***
Self-care ability scale score	1.07*
IQ score	.46***
Demographic characteristics	
Age in most recent school year	-.90*
Student was older than typical age for grade	-1.99
Student was male, not female	-1.29
Student was minority, not nonminority	-.67
Household income (5 categories)	1.20**
Single-parent household, not two-parent	-.81
Student attended school in following type of community (not suburban):	
Urban	-2.34
Rural	1.51
Student attended school in following region (rather than West North Central):	
New England	-2.27
Middle Atlantic	-13.31***
South Atlantic	-2.35
East North Central	-9.90***
East South Central	-10.81***
West South Central	-3.26
Mountain	-9.32**
Pacific	-4.15

Notes: Adjusted $r^2 = .38$
$n = 2,227$

* $p<.05$; ** $p<.01$; *** $p<.001$

Household income emerged as a significant predictor of time in regular education even when all the other factors were held constant. Students from higher-income households had higher percentages of time in regular education, with disability and school characteristics controlled for ($p<.001$). Some of the possible mechanisms through which household income might have exerted such an effect were discussed earlier. Higher-income households may have had children who were more capable of functioning in the regular classroom, parents from higher-income households may have advocated more vigorously for regular education, or both. Interestingly, with other factors controlled, the percentage of low-income students in the school was not related to time in regular education, offering no support for the hypothesis that household income was important because students from households with higher incomes attended schools that were more supportive of regular education. A completely different explanation for the relationship is that students from higher-income households differ from other students in ways not measured by the study and that these differences are responsible for household income's apparent association with regular education. This is the problem of "unmeasured student characteristics" discussed above.

Differences emerged among different regions of the country in the percentage of time students were in regular education. These differences in regular education participation were found regardless of disability or other demographic differences between students. Students in the West North Central region were found to average 13 percentage points more time in regular education than students in the Middle Atlantic states, 11 percentage points more than students in the East South Central region, and 10 percentage points more than students in the East North Central region. These findings provide support to the hypothesized importance of historical and political factors in special education decisionmaking. The amount of time students spent in regular education was not determined solely by student characteristics, but by educational traditions that reinforce certain types of classroom placements for students with disabilities. The amount of regular education participation seen as appropriate for the same kind of student differed depending on the region of the country in which that student lived.

Like demographic factors, school-related factors explained only a small amount of variation in time spent in regular education classes beyond that explained by disability. Nevertheless, several school factors were found to be significantly related to time in regular education, including taking an occupationally oriented vocational course, taking a nonacademic course, attending a school in which mainstreamed students were not expected to keep up in regular education without help, and attending a school in which teachers had received in-service training in mainstreaming.

Taking a vocational course or taking a nonacademic course in the most recent year in school both contributed positively to regular education participation. All other factors controlled, students who took a vocational course spent about 9 percentage points more of their time in regular education ($p<.001$) and students who took a nonacademic course spent 7 percentage points more time there ($p<.001$). These factors could be an indication of a type of student competence not captured in the disability characteristics measured in the analyses. All other things being equal, students deemed most competent may have been placed in such courses. Alternatively, these factors could be indicative of attitudes toward the placement of students with disabilities that permeated decisionmaking in the schools. Under this hypothesis, students with disabilities may have been more likely to be placed in regular education courses in buildings in which vocational and nonacademic courses were open to them. A further possible explanation is that many vocational courses and nonacademic courses were regular education courses; a student's placement in such a course would have increased his/her overall percentage of time in regular education.

Students in schools that reported that students with disabilities in regular education classes were expected to keep up with the rest of the class without special help were found to spend about 3 percentage points less time in regular education classes. Possibly, staff were leery of placing students with disabilities in regular education knowing they would be expected to "sink or swim." Alternatively, such expectations may have reflected attitudinal differences between schools that translated into different enrollment patterns in regular education courses for students with disabilities.

Another factor suggestive of an attitudinal difference between schools was in-service training on mainstreaming. Independent of all other factors, students in schools that reported that regular education teachers had training available to them on the needs of students with disabilities spent 3 percentage points more time in regular education. Again, several interpretations are possible. These schools could have been more receptive to the notion of placing students with disabilities, as indicated by both the in-service training and the increased class time in regular education for students with disabilities. Also, the presence of students with disabilities in the classroom could have prompted the school to provide training, or the training could have enhanced the teachers' skills and led the school to place more students with disabilities in regular classrooms.

The percentage of time in regular education associated with many of the factors explored in the multivariate analysis is relatively small, but the effects are additive. Thus, for example, a hypothetical student who was speech impaired, lived in the West North Central states, and took an occupationally oriented vocational course in a school in which regular education teachers had access to in-service training on mainstreaming would be estimated to spend 41% (16.63 + 13.31 + 8.61 + 2.68) more time in regular education than a learning disabled student in the Middle Atlantic states who did not take such a course and who attended a school in which the teachers were not provided such in-service training.

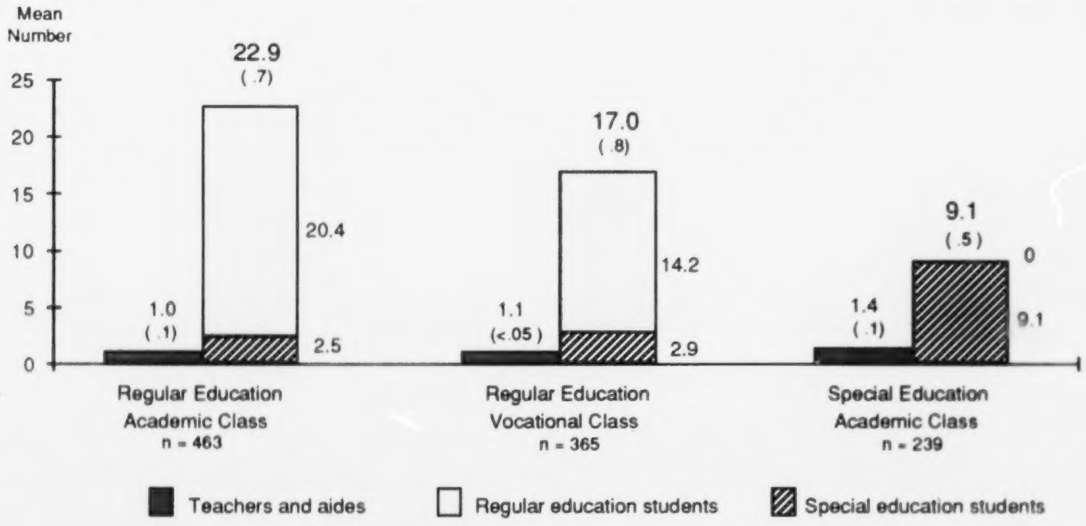
The multivariate analysis has shown that, as expected, disability-related characteristics were strongly related to the amount of time students in special education spent in regular education courses. However, other factors, including household, geographic, and school characteristics also contributed to the differences in time in regular education, suggesting that student characteristics were not the only factors entering into decisions about placement in regular education courses.

Characteristics of Different Classes

Regular education classes differed from special classes in several ways, such as the number and types of students in them and their course content. Here we look at some of the characteristics of regular and special education classes and the kinds of supports provided to teachers and students when students with disabilities were in regular education classes. The data in this section are from the student school program survey, which, as previously noted, were collected for a subsample of youth in the study who primarily were 12th-graders with mild impairments. Additional information about students with disabilities in regular academic classes is contained in Newman (1993) and additional information about regular vocational classes in Blackorby (1993).

Number of Students and Teachers

Students with disabilities encountered their biggest classes in regular academic classes. A regular academic class had an average of 1 teacher, 20 regular students, and 2 or 3 students in special education, or a student-teacher ratio of about 23 to 1 (see Figure 3.5). Regular vocational classes were smaller, but included more special education students. Vocational classes averaged 1 teacher, with 17 regular education students and about 3 special education students. In contrast, the special education academic class provided considerably more opportunities for student-teacher interaction. Special education academic classes averaged 9 students for every 1.4 teachers, roughly a 6-to-1 student-teacher ratio.



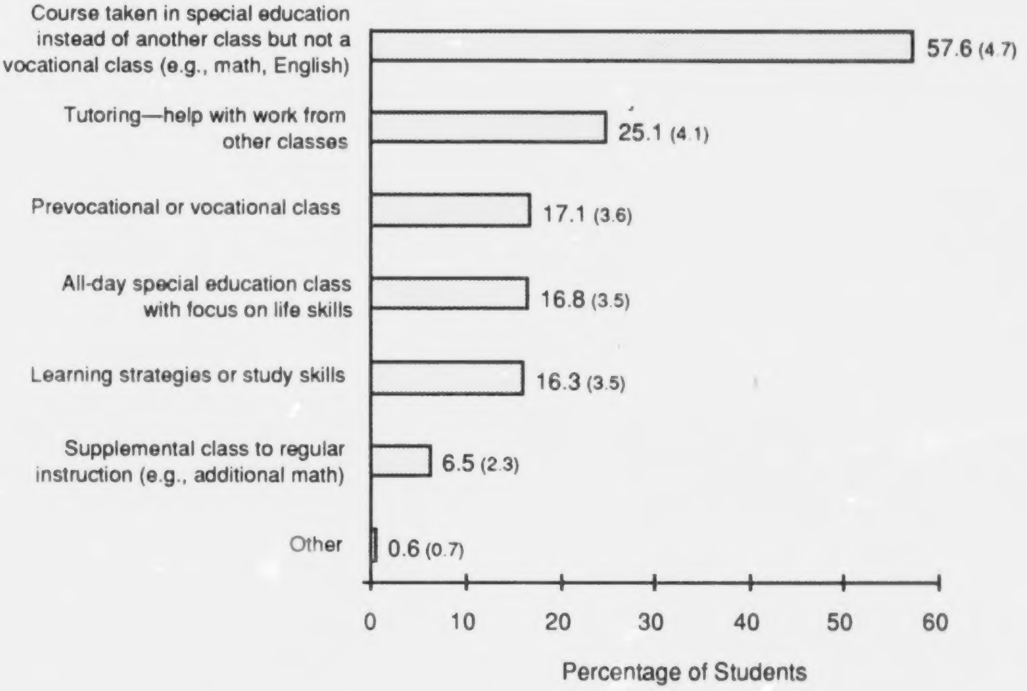
Source: Student school program survey.

FIGURE 3-5 NUMBERS OF TEACHERS AND STUDENTS IN DIFFERENT CLASSES

Types of Special Education Classes

Special education classes can serve many purposes, ranging from providing a completely different curriculum to students with disabilities to providing study skills to facilitate the student's success in the regular classroom. Teachers were asked to indicate the types of special education classes included in students' schedules.

As we have seen, not all students with disabilities took special education classes. Teachers indicated that at least one special education class was taken by 80% of the students in this subsample who were still considered special education students. By far the most frequent type of special education course was a nonvocational replacement class; 58% of the students with any special education classes were reported to be taking such a class (see Figure 3-6). This was a special education class that was taken, for example, to replace a class in English or mathematics offered in the regular classroom. The next most frequently reported



Standard errors are in parentheses.
n = 274
Note: Teachers were asked to indicate type for all special education classes student was currently attending.
Source: Student school program survey.

FIGURE 3-6 TYPES OF SPECIAL EDUCATION CLASSES

type of special education class was tutoring (25%), which was described as help with work from other classes, such as help doing assignments or homework or taking tests. Fewer students, about 17%, were reported to be in special education classes that were life skills classes, prevocational or vocational classes, or study skills classes. The role of special education for secondary students seemed to be primarily to replace regular education, and only secondarily to support student performance in that environment.

Expectations in Regular Classes

The overwhelming majority of students with disabilities were expected to keep up with other students in the class in both regular academic and vocational courses. Slightly fewer actually did keep up, however. Overall, 92% of students with disabilities in regular academic classes were expected to keep up; 86% did so. Figure 3-7 shows the differences between expectations and student performance for different disability groups. All groups experienced at least a slight discrepancy. The greatest discrepancy was found for students with orthopedic or other health impairments; 99% were expected to keep up with the other students, but only 76% did so. Students with mental retardation were the only group for whom performance actually exceeded expectations. Teachers expected 68% of these students to keep up, but 79% did so.

Figure 3-7 also shows the expectations for students with disabilities in regular vocational classes. For students with disabilities as a group, performance closely matched teacher expectations: 91% were expected to keep up, and 91% did so (although these may not have been the same students in both percentages). Again, students with mental retardation exceeded expectations, and students with orthopedic or other health impairments fell the farthest short.

To learn more about how students with disabilities were being supported in the regular classroom, teachers were asked what kind of help was provided to the student in a regular academic class and in a regular vocational class. The findings are shown in Figure 3-8. For 82% of the students, teachers reported the need for some kind of accommodation in an academic regular education class.* Teachers also reported, however, that 92% of the students were provided with some kind of accommodations. The accommodations reported most frequently were student progress monitored by a special education teacher (45%) and help taking tests (42%). Other frequently reported accommodations in regular academic classes were tutoring by the special education teacher (35%), more 1-to-1 instruction (27%), and learning strategies/study skills assistance (24%).

Regular vocational education classes were similar to academic classes in that the majority of students needed and received some kind of accommodation. However, they differed somewhat in the type of accommodations provided. For 78% of the students, the teachers

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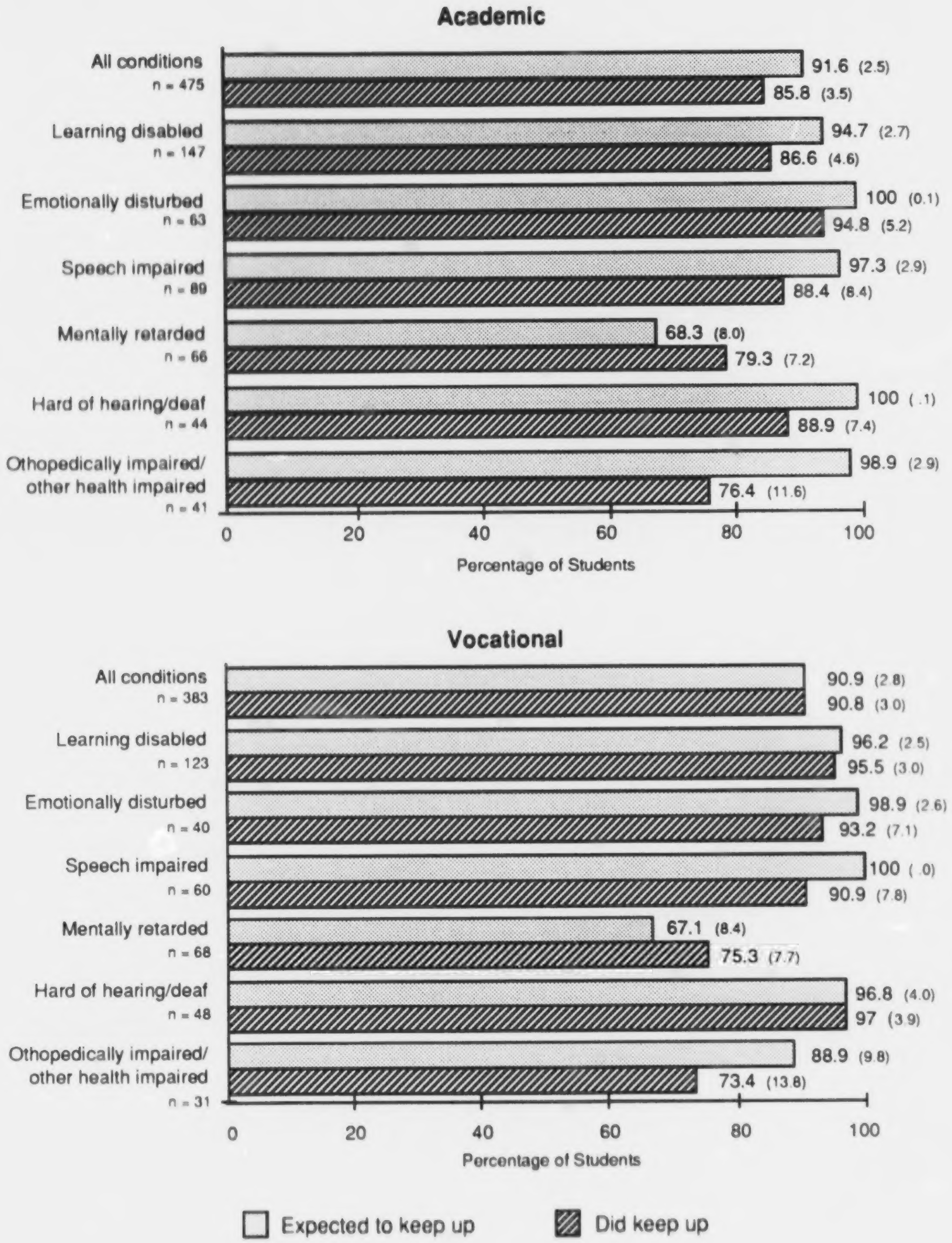
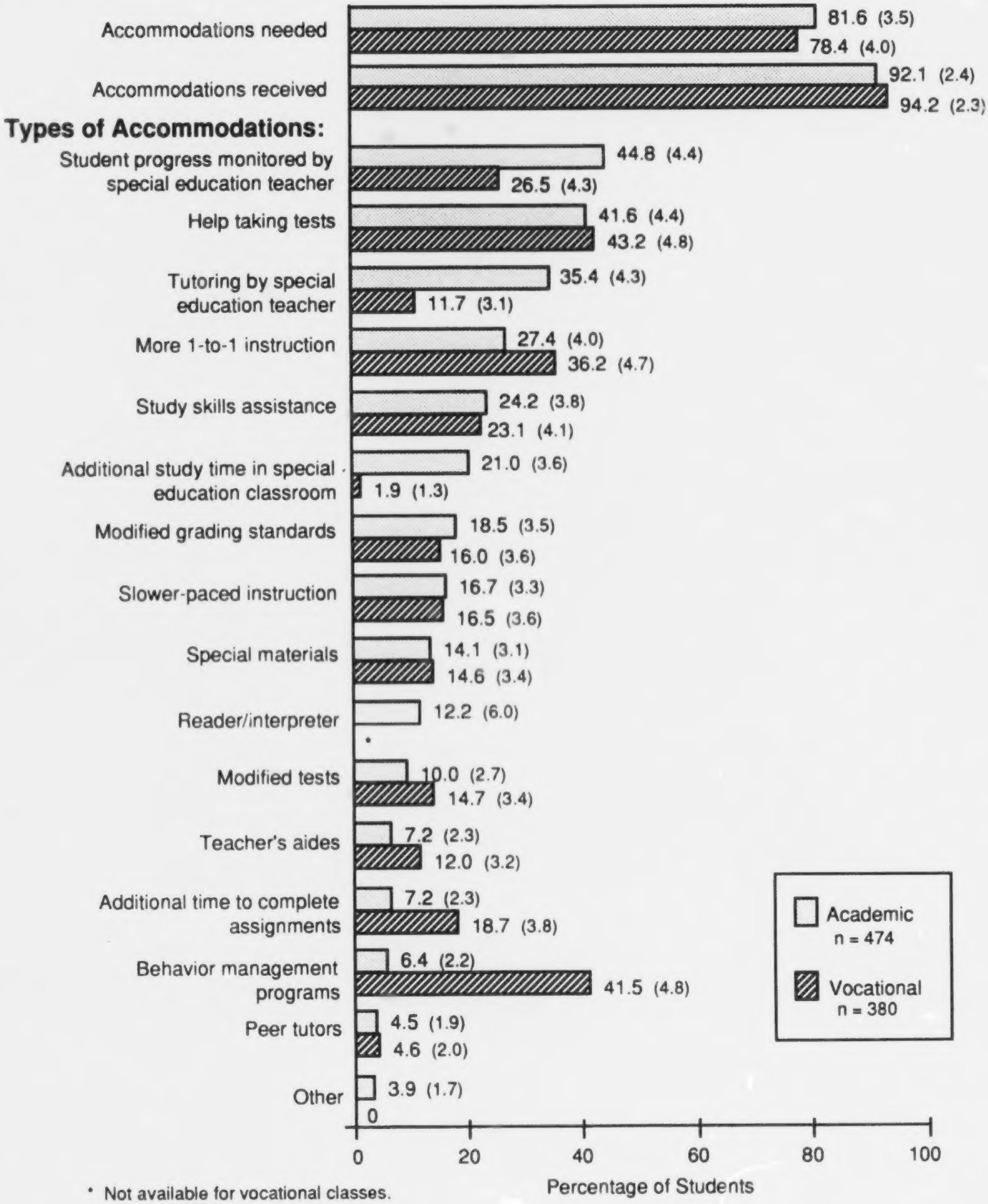
* Teachers were asked to respond for either a history or social studies class or, if the student was taking neither, for the first academic regular class in the student's week.



Source: Student school program survey.

FIGURE 3-7 EXPECTATIONS AND PERFORMANCE IN REGULAR EDUCATION CLASSES

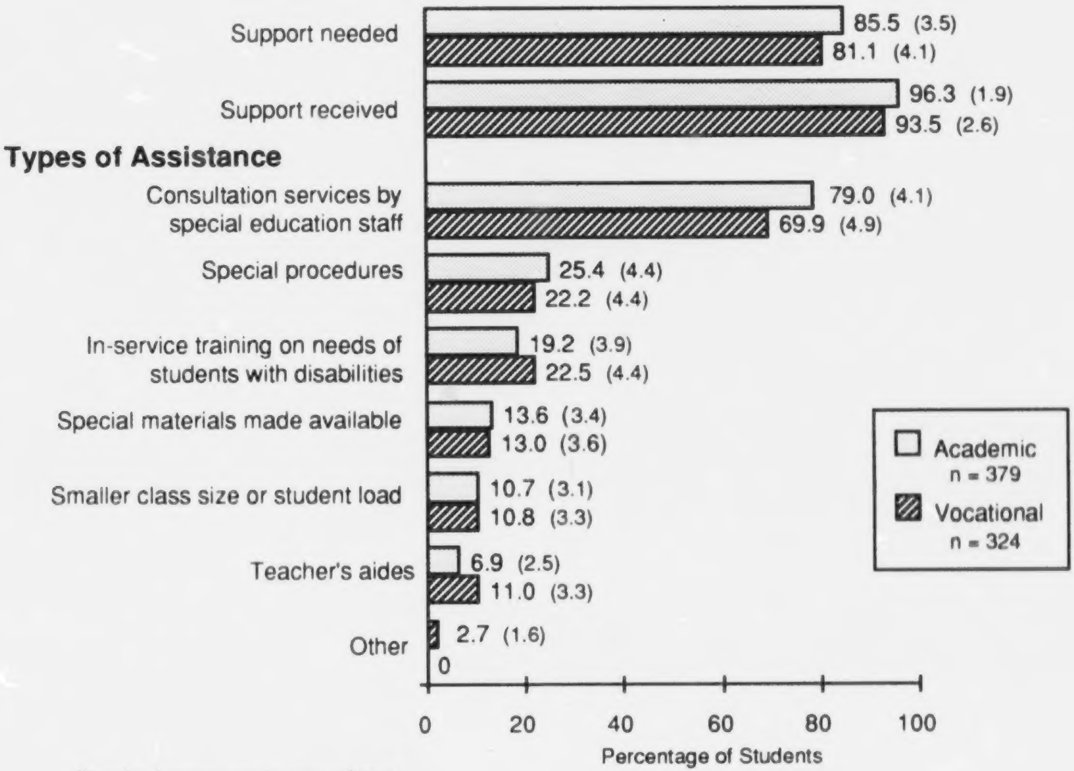


* Not available for vocational classes.
Standard errors are in parentheses.
Source: Student school program survey.

FIGURE 3-8 ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES IN REGULAR EDUCATION CLASSES

reported a need for accommodations in a regular vocational class; 94% received some kind of accommodation. The most frequently reported accommodations were help in test taking (43%) and behavior management (42%). Other frequently reported strategies were more 1-to-1 instruction (36%), progress monitored by a special education teacher (26%), and learning strategies/study skills assistance (23%).

Regular education teachers may have needed extra assistance to ensure that students with disabilities had a successful experience in regular classes. Teachers completing the school program survey were asked to indicate what help had been made available to the student's regular academic and vocational teachers because the student was in those classes. Most regular academic teachers (86%) were reported to need some kind of support; 96% received some type of support. The type of support provided most frequently to teachers of regular academic classes was consultation services with the special education staff (79%), followed by special procedures to use with special education students (25%). Few teachers reported receiving special materials, smaller class sizes, or teacher's aides (see Figure 3-9).



Standard errors are in parentheses.
Source: Student school program survey.

FIGURE 3-9 SUPPORTS PROVIDED TO REGULAR EDUCATION TEACHERS WHEN A STUDENT WITH A DISABILITY IS IN THEIR CLASSES

The findings for regular vocational teachers were very similar, with 81% reporting needing some kind of support and 94% receiving some. As for regular academic teachers, the most frequently reported support received by vocational teachers was consultation services from special education staff, with all other supports being received far less frequently.

Summary

In this chapter, we have looked at participation in regular education classes and its relationship to other factors. We have seen that the majority of students with disabilities participated at least minimally in regular education courses at the secondary level, and a sizable number participated extensively. The level of participation varied, however, for different subgroups within the general population of students with disabilities. Within regular high schools, students with mental retardation and multiple impairments assigned to grade levels and students not assigned to grade levels had by far the lowest participation rates. When we include students in special schools, we see relatively low overall participation rates for students with deafness and visual impairments as well. The regular education participation of students with visual impairments was affected most dramatically by the type of school attended. Nearly all students with visual impairments in regular high schools took regular classes. In fact, they had the highest participation rate across all disability groups. However, slightly over a third of all students with visual impairments attended special schools, which means that, as a group, students with this disability classification had a relatively low level of participation in regular education.

We have also seen that participation in regular education varied as a function of a number of other characteristics related to student capabilities in addition to primary disability classification. These included IQ, functional skills, and reading and math level. This variation attests that placements were individual determinations based on a student's skills and needs. Individual characteristics were not the only variables related to time in regular education, however. Time in regular education was found to vary in direct proportion to family income; as family income went up, so did time in regular education. This relationship held, even independent of a number of other factors potentially related to time in regular education. Characteristics of schools found to be related to regular education participation included region of the country, expectations for mainstreamed students with disabilities, and availability of in-service training. Individual characteristics thus were not the only factors entering into decisions about the placement of students with disabilities in regular education courses.

And what were regular education classes like for students with disabilities? For one thing, there were many more students: regular academic classes averaged a student-teacher ratio about 3-1/2 times higher than that found in special education academic classes. The study found some evidence of a linkage between regular and special education, but for most students the links appear weak. The majority of students were taking special education classes designed to replace a regular education class rather than supplement it. Teachers reported that most students in regular classes needed and received a variety of accommodations. However, any specific accommodation was received by only a minority of students with disabilities. For example, fewer than half had their progress in the regular classroom monitored by a special education teacher, and only 1 in 10 received modified tests. Additional personnel were almost nonexistent: only 7% of the students with disabilities received the benefits of an aide in the regular classroom. These findings suggest that regular education classes may be a difficult environment for many students with disabilities—a hypothesis substantiated by the findings in the next chapter.

4 REGULAR EDUCATION AND EXPERIENCES DURING SECONDARY SCHOOL

The extensive discussion that has surrounded the topic of educational setting for students with disabilities is predicated in part on the assumption that setting makes both short- and long-term differences in how students do. Presumably, spending large amounts of time in either special or regular education is relevant to what a young person learns and accomplishes in school and later in life. Yet there is very little empirical evidence to back up this assumption. We haven't known whether setting matters, how much it matters, or whether it matters for some students more than others.

Shining empirical light on this issue has been difficult for several reasons, including the lack of agreement as to what constitutes "better" outcomes. Just what outcomes are secondary schools trying to achieve for students with disabilities? The goals of secondary education have been the subject of debate for years in this country and have ranged from preparing an educated citizenry for democracy to preparing a trained work force to compete in the global economy (Boyer, 1983; Phelps, 1992). Those concerned with the education of students with disabilities have only recently entered into this discussion and begun the task of specifying outcomes for secondary students (Ysseldyke, Thurlow, and Gilman, 1993).

The NTLS can enlighten this discussion by shedding light on the relationship of placement in regular education to several student outcomes. In this chapter, we examine both academic and social outcomes for secondary school students. In the first section, we look at student performance, as measured by grades. We look at how students with disabilities performed in regular and special education classes and how time in regular education settings was related to academic outcomes. In the second half of the chapter, we turn to social outcomes, addressing such issues as the relationship between spending time in regular education and being socially isolated or belonging to groups. All outcomes discussed in this chapter refer to the years when students were still in secondary school. In the next chapter, we examine whether time in regular education contributed to what happens after secondary school.

Regular Education and Student Performance

The NTLS collected data on three measures of student performance: grades, absenteeism, and high school completion. Grades present several problems as an outcome measure, including the variability between teachers in how they assign grades and the varying difficulty levels of different courses. Nevertheless, grades continue to be the way schools communicate to students and parents how well the student has met performance expectations for a course. We begin our examination of grades and regular education with a discussion of the grades students with disabilities received in their regular and special education courses.

We follow this with data on the relationship between time in regular education and grades received.

A second measure of student performance examined by the NLTS is the number of days absent. Although showing up for school may seem to indicate little about student performance, it still was a positive outcome that not all students achieved. The last performance measure we examine is graduation status. Did time spent in regular education have any relationship to whether or not students completed school? Having examined first the simple bivariate relationships between regular education and these aspects of student performance, we then turn our attention to the relative contribution of regular education to student outcomes when it is considered along with other potential factors in a multivariate model. As we learned in the preceding chapter, who took regular education was related to a number of factors that must be accounted for analytically so that the independent contribution of regular education placement to student outcomes can be identified. The section on achievement and regular education closes with a look at the students with disabilities who did well in regular education to identify notable characteristics of those students.

Performance in Regular and Special Education Classes

At all four secondary grade levels, students with disabilities averaged a higher GPA in special education courses than in regular education courses, although the numerical difference was small. As shown in Table 4-1, the average GPA for 9th-graders with disabilities in regular education courses was 1.9, whereas the average in special education courses was 2.2. For students in the upper grades, both GPAs were higher, but the pattern continued to favor grades earned in special education courses. Twelfth-graders, for example, averaged 2.3 in regular education courses and 2.5 in special education courses. Several explanations can be posited for the higher GPA in the upper grade levels, including easier coursework (students took fewer academic courses in the upper grades; Newman, 1993), greater student effort, or a "creaming effect" whereby the poorest students dropped out, leaving better students still in school by 12th grade.

The pattern of higher GPA in both special education and in the upper grades held for all disability groups (see Table 4-1). Again, the numerical differences were small, but the patterns were consistent for different disability groups and grade levels. Students in some disability groups earned higher grades than others. Students with visual, hearing, or orthopedic impairments earned some of the best grades in special and regular education coursework at all grade levels. In 12th grade, for example, they earned nearly B averages in their special education courses. Students with serious emotional disturbances were consistently the lowest achievers at all grade levels, averaging mostly a low C or a high D throughout high school.

Table 4-1

GPAS IN REGULAR AND SPECIAL EDUCATION CLASSES, BY DISABILITY CATEGORY

		All Conditions*	Learning Disabled	Emotion-ally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Hard of Hearing	Deaf	Orthoped-ically Impaired	Other Health Impaired	Multiply Handi-capped
GPA for students in:												
9th grade												
Regular education		1.9	1.9	1.7	2.1	1.9	2.4	2.2	2.5	2.3	2.0	2.0
		(<.1)	(<.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.2)
	n	2,661	515	262	272	337	252	366	161	252	185	55
Special education		2.2	2.2	1.9	2.4	2.2	2.9	2.5	2.7	2.7	2.5	2.2
		(<.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)
	n	1,722	339	167	93	325	112	195	126	186	99	79
10th grade												
Regular education		1.9	1.9	1.6	2.1	1.9	2.3	2.2	2.4	2.3	1.9	2.1
		(<.1)	(<.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.2)
	n	2,548	494	242	248	316	251	354	134	249	180	56
Special education		2.2	2.3	1.8	2.3	2.3	2.9	2.7	2.7	2.7	2.4	2.3
		(<.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)
	n	1,705	324	171	84	336	102	217	134	160	93	81
11th grade												
Regular education		2.0	1.9	1.8	2.2	2.0	2.3	2.3	2.5	2.4	2.1	2.1
		(<.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.2)
	n	2,451	494	206	242	295	240	344	159	247	170	50
Special education		2.3	2.3	2.0	2.4	2.4	2.9	2.7	2.6	2.7	2.5	2.3
		(<.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)
	n	1,622	333	129	86	314	100	207	135	158	80	77
12th grade												
Regular education		2.3	2.2	2.1	2.6	2.3	2.5	2.5	2.7	2.5	2.4	2.5
		(<.1)	(<.1)	(.1)	(.1)	(.1)	(.1)	(<.1)	(.1)	(.1)	(.1)	(.1)
	n	2,800	583	235	282	335	277	391	196	274	167	53
Special education		2.5	2.5	2.3	2.7	2.6	3.0	2.8	2.9	2.9	2.7	2.6
		(<.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)
	n	1,859	380	135	104	378	119	233	167	187	81	72
Grades 9 through 12												
Regular education		2.3	2.2	2.1	2.6	2.3	2.6	2.5	2.6	2.5	2.4	2.6
		(<.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.2)
	n	1,908	352	145	200	200	204	294	140	208	122	39
Special education		2.5	2.5	2.2	2.6	2.6	3.0	2.9	2.9	2.9	2.7	2.7
		(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)	(.1)
	n	1,150	197	72	60	222	84	163	114	124	55	57

Standard errors are in parentheses.

- "All conditions" includes youth in each of the 11 federal special education disability categories. Percentages are reported separately only for categories with at least 25 students.

Sources: 1990 student transcripts and 1987 student record abstracts.

It was not surprising to find lower grades in regular education courses than special education courses, given that special education courses are specifically intended to meet the educational needs of students with disabilities. What is somewhat surprising is the relatively low levels of performance exhibited by these students even in their special education courses. In theory, students were placed in these courses on the basis of an individual determination of educational need. The low grades received in special education courses would suggest that at least some students' needs were not being met, even in the special education setting. This conclusion is further strengthened by NLTS data on course failure.

As mentioned previously, GPA can be a difficult measure to interpret and compare for different courses and different students. Failing a course, however, does not suffer the same ambiguities of meaning. Receiving an F is clear evidence that a student did not meet even minimal standards of performance. Furthermore, a failing student would not receive credit for the course and, if that happened with sufficient frequency, would not move on to the next grade level. Ultimately, repeated course failure puts the student at risk for dropping out, as the credits required for graduation do not accumulate steadily.

At each grade in high school, the majority of students in special education did not experience course failure in either regular or special education. However, there were students with disabilities who did fail regular or special education courses, or both, and some who failed repeatedly. Overall, among students who took regular education courses, 41% of 9th-graders, 42% of 10th-graders, 36% of 11th-graders, and 23% of 12th-graders failed one or more of those courses. The comparable figures for those who took special education courses were 18%, 19%, 16%, and 7%. Again, we see that the most challenging place and time for students with disabilities were regular education courses in the lower grades of high school.

The percentages of students in each disability group who failed one or more courses are shown in Table 4-2. Across all disability groups, students experienced substantially less course failure in special education courses than in regular education courses. Whereas from 22% to 55% of students, depending on disability, failed a regular education course in 9th grade, only 9% to 26% failed a special education course. Among 12th-graders, 14% to 31% failed a regular education course; 2% to 12% failed special education courses.

As we have seen above and in previous NLTS reports (Wagner, 1991b), students who experienced the most academic difficulties were students with serious emotional disturbances. A majority of 9th-, 10th-, and 11th-graders with serious emotional disturbances failed at least one regular education class. Among 12th-graders, only 30% failed one or more courses. By 12th grade, however, many of these students had already dropped out of school (Wagner, 1991a; Hebbeler, 1993; Wagner, Blackorby, and Hebbeler, 1993). Students with serious emotional disturbances performed better in special education classes than in regular education classes, but they had the highest percentages of students failing courses of all disability groups in that setting as well.

Table 4-2

PERCENTAGE OF STUDENTS WHO FAILED COURSES AT EACH GRADE LEVEL, BY DISABILITY CATEGORY

	All Conditions*	Learning Disabled	Emotion-ally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Hard of Hearing	Deaf	Orthopedi-cally Impaired	Other Health Impaired	Multiply Handi-capped
Percentage failing courses in:											
9th grade											
Regular education	41.2	41.8	55.0	40.4	34.7	30.5	27.7	22.3	32.5	37.8	26.4
	(2.1)	(3.0)	(4.3)	(4.3)	(3.6)	(4.1)	(3.4)	(4.8)	(4.4)	(5.2)	(9.0)
n	2,236	452	225	225	290	219	298	133	197	149	44
Special education	17.7	18.2	25.5	14.1	14.8	9.2	11.4	10.9	11.5	14.8	16.8
	(1.9)	(2.9)	(4.6)	(5.2)	(2.8)	(3.8)	(3.4)	(4.1)	(3.6)	(5.4)	(6.5)
n	1,420	296	147	75	270	103	155	104	134	76	59
10th grade											
Regular education	42.0	41.5	57.8	36.6	37.2	34.4	31.1	24.5	40.7	54.3	29.9
	(2.1)	(3.0)	(4.4)	(4.4)	(3.8)	(4.2)	(3.6)	(5.0)	(4.5)	(5.4)	(9.4)
n	2,159	432	210	208	268	218	294	133	204	144	44
Special education	18.7	17.0	36.0	18.0	16.8	11.7	8.6	13.1	11.8	30.6	25.9
	(2.0)	(2.9)	(5.1)	(6.2)	(2.9)	(4.4)	(2.8)	(4.2)	(3.8)	(7.3)	(7.6)
n	1,424	284	152	66	285	94	174	112	125	69	60
11th grade											
Regular education	36.3	37.2	56.1	32.0	25.4	25.7	29.0	20.0	34.6	46.4	17.4
	(2.1)	(3.0)	(4.8)	(4.2)	(3.5)	(4.0)	(3.5)	(4.5)	(4.4)	(5.6)	(8.0)
n	2,109	439	182	207	260	208	288	139	202	139	41
Special education	15.9	15.5	26.1	10.8	15.4	9.9	11.7	12.7	6.9	12.6	11.1
	(1.9)	(2.7)	(5.3)	(4.8)	(2.8)	(4.2)	(3.3)	(4.1)	(3.0)	(5.9)	(5.4)
n	1,373	294	118	71	279	89	165	114	123	56	61
12th grade											
Regular education	23.0	23.7	30.3	20.3	18.2	24.0	17.2	14.2	16.1	31.1	19.8
	(1.7)	(2.4)	(4.2)	(3.4)	(2.9)	(3.6)	(2.7)	(3.5)	(3.2)	(5.2)	(8.1)
n	2,538	547	214	256	313	250	349	182	234	143	45
Special education	7.2	7.2	11.8	6.0	6.5	7.1	1.9	4.7	4.6	8.1	4.4
	(1.2)	(1.8)	(3.8)	(3.3)	(1.7)	(3.2)	(1.3)	(2.4)	(2.3)	(4.7)	(3.6)
n	1,681	356	127	96	352	112	204	148	161	62	60
Grades 9 through 12											
Regular education	58.6	61.0	77.0	51.6	46.1	50.3	49.0	42.0	52.0	63.7	39.5
	(2.4)	(3.4)	(4.6)	(4.9)	(4.3)	(4.7)	(4.0)	(5.7)	(4.8)	(6.1)	(9.9)
n	1,836	346	137	181	231	191	271	130	192	107	45
Special education	20.0	18.2	34.8	23.3	20.3	16.5	11.6	22.8	12.7	23.0	32.0
	(2.1)	(3.0)	(6.0)	(6.7)	(3.3)	(4.7)	(3.1)	(5.0)	(3.6)	(6.8)	(8.2)
n	1,392	277	105	69	248	109	184	124	147	66	59

Standard errors are in parentheses.

Percentages based only on students who took each kind of course.

* "All conditions" includes youth in each of the 11 federal special education disability categories. Percentages are reported separately only for categories with at least 25 students.

Sources: 1990 student transcripts and 1987 student record abstracts.

To understand the extent of course failure among students with disabilities, we looked at the average percentage of courses failed in regular and special education. Among students who took regular education courses in 9th grade, the average percentage of courses failed was 15% (see Table 4-3). In grade 12, the figure was 8%. For some students, the percentage of courses failed was much lower. Students with visual impairments in grade 9 failed 8% of their regular education courses, despite taking more such courses than most other disability groups. Students who were deaf and in 9th grade failed an average of only 6% of their regular education courses. Ninth-graders with serious emotional disturbances or mental retardation had a much tougher time in their regular education courses, failing an average of 22% and 17% of their regular education courses, respectively. In fact, 16% of 9th-graders with serious emotional disturbances in regular education courses failed six or more of those courses at that grade level.

Students experienced more success in their special education classes, but it was not a place without failure. On the average, students failed 10% of their special education classes in 9th grade. Twelfth-graders fared better, receiving Fs in only 4% of their special education classes. Again, failure rates differed between disability groups. Ninth-graders who were visually impaired or deaf failed only 3% of their special education classes. Students with serious emotional disturbances, on the other hand, failed an average of 17% of their special education classes in 9th grade. Eight percent of these students failed six or more special education classes in 9th grade.

Our examination of grades received in regular and special education classes has shown several things. Whether considering GPA or receipt of failing grades, students with disabilities had a more difficult time academically in regular education courses than in special education courses. Whereas the GPAs for regular and special education courses were only marginally different, the pattern was the same regardless of disability or grade level. Also, students with disabilities exhibited the poorest overall performance in the 9th and 10th grades in both regular and special education. The poor performance at these grade levels was probably due to a combination of factors, including the heavier emphasis on academic courses and the poor performance of students who would drop out before 11th or 12th grade. The majority of students with disabilities at any given grade level did not receive a failing grade. However, for students who spent 4 years in school, only 41% never received a failing grade in a regular education class. In contrast, 80% never received a failing grade in a special education class.

Hidden behind average GPAs is the fact that there were some students who did well, some students who encountered course failure occasionally, and another group of students who failed repeatedly. This latter group of students failed in both regular and special education settings. The correlation between getting an F in a regular education setting and getting an F in a special education class was relatively high: .58 ($p<.001$) for 9th-graders and .55 ($p<.001$) for 10th-graders. And although students with serious emotional disturbances failed the most, the correlations between failing a regular and a special education course were similar for all disability groups. For students who failed, often failure came in both settings. For this group

Table 4-3

AVERAGE PERCENTAGE OF COURSES FAILED AT EACH GRADE LEVEL, BY DISABILITY CATEGORY

	All Conditions*	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Hard of Hearing	Deaf	Orthopedically Impaired	Other Health Impaired	Multiply Handicapped
Percentage of courses failed in:											
9th grade											
Regular education	15.3	14.3	22.5	14.2	16.7	7.5	9.2	6.1	10.9	13.8	10.3
	(1.1)	(1.4)	(2.5)	(2.0)	(2.2)	(1.3)	(1.6)	(1.7)	(2.2)	(2.7)	(5.1)
n	2,236	452	225	225	290	219	298	133	197	149	44
Special education	9.6	9.3	16.7	5.1	8.9	3.3	4.3	3.0	4.4	8.4	5.0
	(1.3)	(1.8)	(3.5)	(2.3)	(2.0)	(1.6)	(1.6)	(1.3)	(1.9)	(3.3)	(2.9)
n	1,420	296	147	75	270	103	155	104	134	76	59
10th grade											
Regular education	16.0	14.7	27.4	12.1	16.4	9.9	7.7	5.4	11.8	19.9	11.1
	(1.1)	(1.5)	(2.9)	(2.0)	(2.1)	(1.7)	(1.3)	(1.4)	(1.9)	(2.9)	(4.7)
n	2,159	432	210	208	268	218	294	133	204	144	44
Special education	9.0	7.5	22.7	9.1	7.9	4.0	2.9	2.8	4.4	12.9	7.2
	(1.2)	(1.6)	(3.8)	(3.7)	(1.7)	(1.9)	(1.2)	(1.1)	(1.8)	(4.2)	(3.0)
n	1,424	284	152	66	285	94	174	112	125	69	60
11th grade											
Regular education	14.3	14.6	22.8	10.1	11.3	5.9	7.9	7.0	9.9	16.9	5.1
	(1.1)	(1.6)	(2.8)	(1.8)	(1.9)	(1.2)	(1.4)	(2.2)	(1.9)	(3.2)	(3.2)
n	2,109	439	182	207	260	208	288	139	202	139	41
Special education	8.4	8.0	14.8	7.2	8.3	3.6	3.7	4.2	2.8	7.9	5.3
	(1.2)	(1.7)	(3.6)	(3.5)	(1.8)	(1.8)	(1.5)	(1.7)	(1.6)	(4.2)	(3.2)
n	1,373	294	118	71	279	89	165	114	123	56	61
12th grade											
Regular education	7.5	7.8	10.9	6.2	5.5	4.7	3.9	4.1	5.2	9.7	6.0
	(.8)	(1.1)	(2.2)	(1.5)	(1.1)	(1.1)	(.9)	(1.3)	(1.4)	(2.5)	(3.7)
n	2,538	547	214	256	313	250	349	182	234	143	45
Special education	3.6	4.0	6.2	3.6	2.5	3.6	0.9	2.5	0.9	2.6	0.6
	(.8)	(1.2)	(2.4)	(2.2)	(.8)	(2.0)	(.7)	(1.5)	(.5)	(2.2)	(.5)
n	1,681	356	127	96	352	112	204	148	161	62	60
Grades 9 through 12											
Regular education	8.9	8.5	14.6	7.6	8.9	4.8	5.5	4.9	6.8	9.8	4.9
	(.6)	(.8)	(1.7)	(1.2)	(1.3)	(.7)	(.9)	(1.3)	(1.3)	(1.6)	(1.8)
n	1,836	346	137	181	231	191	271	130	192	107	45
Special education	3.5	3.0	8.0	3.5	3.7	2.5	1.4	3.8	1.6	4.6	2.4
	(.6)	(.8)	(2.1)	(1.3)	(1.0)	(1.1)	(.6)	(1.3)	(.9)	(1.7)	(.8)
n	1,392	277	105	69	248	109	184	124	147	66	59

Standard errors are in parentheses.

Percentages based only on students who took each kind of course.

* "All conditions" includes youth in each of the 11 federal special education disability categories. Percentages are reported separately only for categories with at least 25 students.

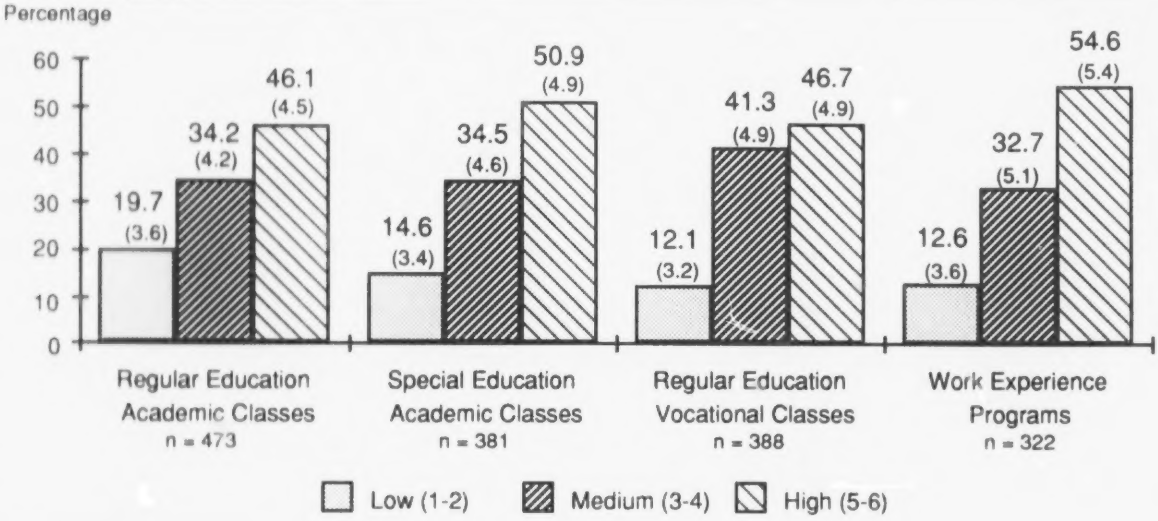
Sources: 1990 student transcripts and 1987 student record abstracts.

of students with disabilities, neither the regular nor the special education setting seemed to meet their needs.

This finding is further substantiated by the findings from two scales on which teachers rated the in-class behavior in several settings for a subset of the 12th-graders in the study. These items were combined to form a behavioral norm scale and a task performance scale. (See Wagner, Blackorby, and Hebbeler, 1993, for a more complete discussion of the findings regarding these two scales.)

For the behavioral scale, teachers were asked to rate how well the students (1) got along with others in class, (2) followed directions, and (3) controlled their behavior in class in several settings. Teachers rated each item on a 4-point scale ranging from "very well" (4 points) to "not at all well" (1 point). These ratings were then combined into a 6-category scale with the resulting high, medium, low scores shown in Figure 4-1.

The proportion of students rated as low, medium, or high on classroom behavior differed between settings in a predictable way. None of the differences, however, were statistically significant because of the relatively small number of students rated. Approximately half of all students with disabilities were rated highly on the behavioral scale in each of the settings; 46% were rated highly for their behavior in regular academic classrooms. Many students' behavior was consistent across the various settings. For instance, the ratings for the academic regular classroom correlated highly with those for vocational classes (r = .77, p<.001) and special education classes (r = .68, p<.001), indicating that, for the most part, students who conformed to the behavioral norms in one type of class conformed in the others as well. Yet the data



Standard errors are in parentheses.

FIGURE 4-1 BEHAVIORAL NORM SCALE SCORES FOR 12TH-GRADERS WITH DISABILITIES

suggest that students with disabilities were slightly more likely to meet behavioral expectations in vocational, special education, or work experience settings than in the regular education classroom. One-fifth of students with disabilities were rated low on the behavioral scale in regular classrooms, compared with 12% in regular vocational education settings, 13% in work experience settings, and 15% in special education settings.

The pattern for the different disability groups across settings suggests that compliance with behavioral norms is influenced by both setting and disability (see Table 4-4). A disproportionately large number of students with serious emotional disturbances experienced

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Table 4-4

BEHAVIORAL NORM SCALE SCORES, BY DISABILITY CATEGORY*

	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Hearing Impaired	Orthopedically/ Other Health Impaired
Percentage receiving rating in:						
Regular education academic classes						
Low	15.9	32.8	13.2	31.5	10.6	27.2
	(4.4)	(95)	(6.1)	(8.0)	(7.2)	(12.2)
Medium	36.7	29.9	22.4	30.2	28.2	25.4
	(5.8)	(9.3)	(7.6)	(7.9)	(10.5)	(11.9)
High	47.4	37.2	64.6	38.3	61.2	47.4
	(6.1)	(9.8)	(8.7)	(8.4)	(11.4)	(13.6)
Special education academic classes						
Low	8.9	12.9	13.6	20.1	0.8	8.8
	(4.2)	(8.3)	(10.6)	(5.5)	(2.1)	(7.1)
Medium	41.3	55.3	46.2	38.5	28.1	47.1
	(7.3)	(12.3)	(15.5)	(6.7)	(10.6)	(12.5)
High	49.9	31.8	40.2	41.5	71.0	44.1
	(7.4)	(11.5)	(15.2)	(6.8)	(10.7)	(12.4)
Regular education vocational classes						
Low	10.9	20.3	9.5	27.7	9.4	17.6
	(4.0)	(9.9)	(6.1)	(8.0)	(6.6)	(11.8)
Medium	33.8	47.0	32.0	34.9	20.3	32.9
	(6.2)	(12.3)	(9.8)	(8.5)	(9.2)	(14.6)
High	55.3	32.6	58.5	37.3	70.3	59.5
	(6.5)	(11.5)	(10.3)	(8.6)	(10.4)	(15.5)
Work experience programs						
Low	9.3	9.5	7.3	22.7	15.5	5.4
	(4.7)	(8.5)	(6.8)	(6.8)	(9.4)	(6.6)
Medium	28.7	38.7	44.1	39.2	25.5	43.7
	(7.3)	(14.1)	(13.0)	(7.9)	(11.4)	(14.5)
High	62.0	51.8	48.6	38.1	59.0	50.9
	(7.8)	(14.5)	(13.1)	(7.9)	(12.8)	(14.6)
n	147	63	89	66	44	41

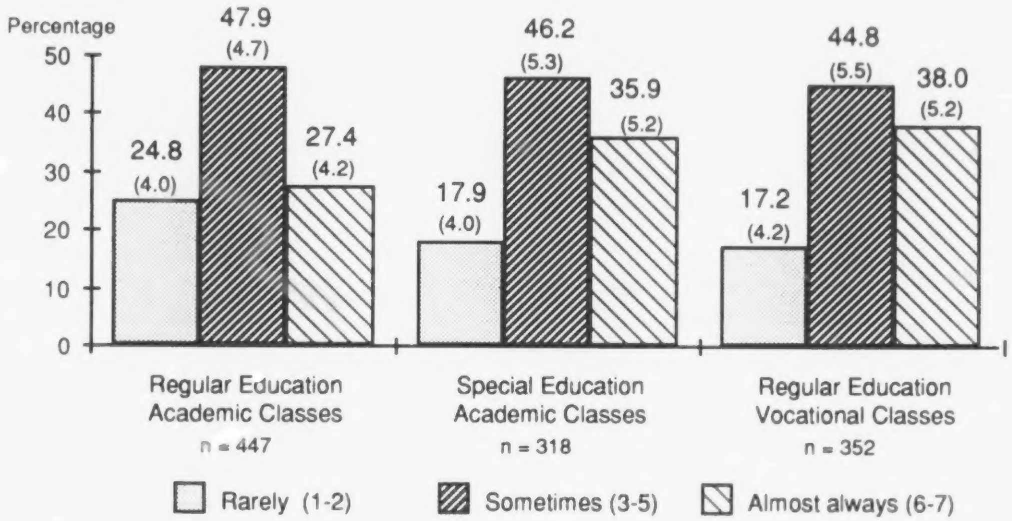
Standard errors are in parentheses.

* Levels of ratings were low (1-2), medium (3-4), and high (5-6).

Source: Student school program survey.

behavioral difficulties in the regular academic classroom. On the other hand, more than half of these students received the highest ratings for behavior in the work experience settings. Perhaps the hands-on nature of work activities better matched their abilities and temperament than the academic tasks of the regular classroom. In contrast, students with mental retardation experienced behavioral problems in the regular academic classroom, but they also were rated relatively low in their work experience programs.

The second scale, the task performance scale, included ratings of how often students (1) completed homework on time, (2) took part in group discussions in class, and (3) stayed focused on class work. The overall findings for three settings are shown in Figure 4-2. Students received higher ratings in regular vocational and special education classes than in regular academic classrooms, although the differences were not dramatic (nor were they statistically significant because of the small sample sizes). Regular education academic classes appeared to be more challenging, although more than one-fourth of students with disabilities were seen by their teachers as almost always complying with task requirements in these classes, and nearly half as sometimes complying. As with the behavioral scale, many students behaved similarly regardless of setting. Task performance in regular academic classes was correlated .71 (p<.001) and .64 (p<.001) with task performance in vocational classes and special education classes, respectively.



Standard errors are in parentheses.

FIGURE 4-2 TASK PERFORMANCE SCALE SCORES FOR 12TH-GRADERS WITH DISABILITIES

Disability groups varied with regard to how well students complied with classroom tasks. The two disability groups that appeared to have the most difficulty complying with the task demands of regular academic and regular vocational classes were students with serious emotional disturbances and those with mental retardation (Table 4-5). Even for each of these groups, more than one-fifth of students were rated as "almost always" performing as expected on the scale in these settings. With the exception of students with speech impairments, special education classes were the settings where students found it easiest to meet the task demands of the classroom; more students with speech impairments received high ratings in regular vocational classes. In general, regardless of the scale, the setting, or the type of disability, some students were perceived as doing well, the majority were in the middle, and a minority were seen as doing very poorly—in regular education and even sometimes in special education.

Table 4-5

TASK PERFORMANCE RATINGS, BY DISABILITY CATEGORY*

	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Hearing Impaired	Orthopedically/ Other Health Impaired
Percentage of students receiving rating in:						
Regular education academic classes						
Rarely	22.4 (5.2)	30.3 (9.5)	20.8 (7.4)	35.3 (8.8)	10.9 (7.7)	26.6 (12.2)
Sometimes	50.5 (6.3)	47.3 (10.3)	31.2 (8.5)	42.5 (9.1)	46.5 (12.3)	32.8 (13.0)
Almost always	27.1 (5.6)	22.4 (8.6)	48.0 (9.1)	22.2 (7.6)	42.6 (12.2)	40.6 (13.6)
Special education academic classes						
Rarely	19.4 (6.2)	12.4 (9.1)	10.5 (10.4)	14.4 (5.0)	12.9 (8.1)	17.1 (10.0)
Sometimes	39.4 (7.6)	46.0 (13.7)	73.3 (15.0)	55.6 (7.1)	31.6 (11.3)	49.2 (13.3)
Almost always	41.2 (7.7)	41.6 (13.6)	16.2 (12.5)	30.0 (6.5)	55.5 (12.2)	33.7 (12.5)
Regular education vocational classes						
Rarely	15.1 (5.1)	25.4 (12.8)	19.2 (9.2)	29.2 (9.2)	13.2 (8.3)	9.6 (9.1)
Sometimes	46.2 (7.0)	52.3 (14.7)	24.4 (11.1)	44.6 (10.1)	59.4 (12.0)	55.2 (15.3)
Almost always	38.6 (6.9)	22.3 (12.3)	46.5 (11.6)	26.3 (8.9)	27.4 (10.9)	35.2 (14.7)
n	147	63	89	66	44	41

Standard errors are in parentheses.

* Levels of ratings were rarely (1-2), sometimes (3-5), and almost always (6-7).

Source: Student school program survey.

The Relationship between Regular Education and Student Performance

We looked at whether students with disabilities who spent much of their day in regular education did better than students who spent less time there with regard to four performance measures: GPA, percentage of failing grades, days absent, and school completion. These outcomes are examined with regard to time in any regular education class, time in academic regular education classes, and time in regular vocational education. The time in academic regular education is particularly interesting because this setting was presumably the most challenging, where students with disabilities would be most likely to encounter difficulty. After looking at the simple bivariate relationships, we report the results of multivariate analyses that disentangle the confounding effects of disability and placement in identifying important influences on student performance.

Table 4-6 shows the percentages of students who spent different amounts of time in regular education settings and their GPAs, percentage of courses failed, and days absent. These data are for students in all disability groups who had complete data for grades 9 through 12.

Table 4-6

RELATIONSHIP BETWEEN TIME IN REGULAR EDUCATION AND GPA, FAILING GRADES, AND DAYS ABSENT

	Average GPA			Average Percentage of Courses Failed			Average Number of Days Absent		
Percentage of time in:	Mean	S.E.	n	Mean	S.E.	n	Mean	S.E.	n
Regular education									
0 - 25%	2.4	.1	339	7.6	1.9	354	14.9	1.5	494
26 - 50%	2.3	.1	318	8.0	1.4	329	14.5	1.7	267
51 - 74%	2.3	.1	362	7.9	1.1	377	12.0	1.1	304
75% or more	2.3	.0	1,225	7.6	.7	1,246	11.7	.7	999
Academic regular education									
0 - 10%	2.3	.1	576	6.6	1.1	598	14.7	1.2	693
11 - 35%	2.4	.1	434	6.9	.9	450	12.1	1.0	366
36 - 50%	2.3	.1	374	7.9	1.0	382	11.7	1.0	305
51% or more	2.3	.1	842	8.6	.9	858	11.5	.9	668
Vocational regular education									
0 - 10%	2.4	.1	864	8.1	1.1	893	13.9	1.0	922
11 - 35%	2.2	.1	589	9.3	1.0	606	12.7	1.2	457
36 - 50%	2.3	.1	472	8.0	1.1	480	11.6	1.1	381
51% or more	2.4	.1	318	5.2	.8	326	12.1	1.0	294

Based on students in regular high schools with complete transcript data for grades 9 through 12.

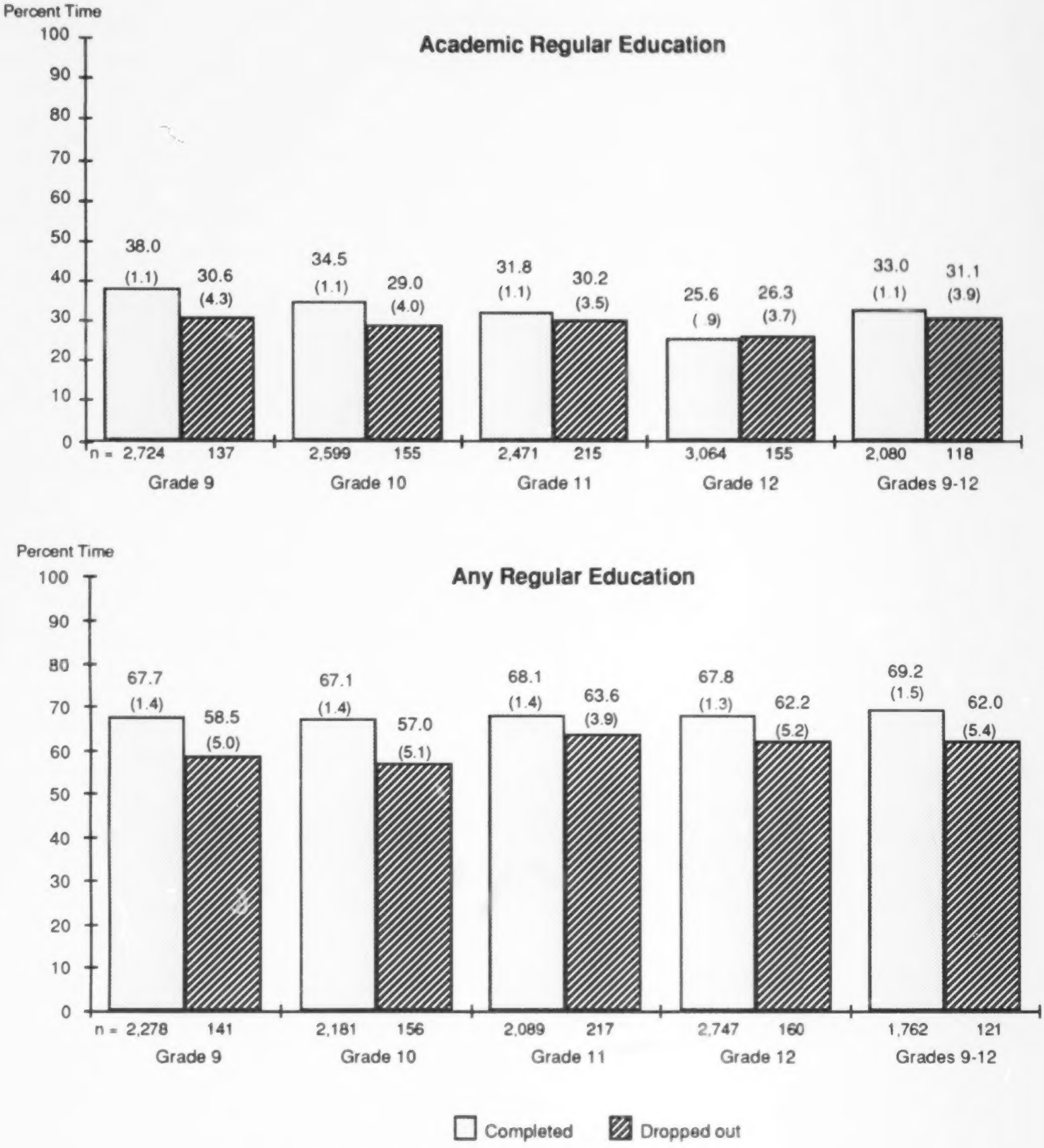
Source: 1990 student transcripts.

There were no differences in GPA between any of the regular education settings or any of the time levels within those settings, despite the differences in skill levels of students in those settings for different periods of time, as shown in the preceding chapter. This was true for each of the disability groups as well as all the groups combined. When the individual grade-level data were examined for each disability group, there were almost no significant relationships between time in regular education and GPA, except for students with mental retardation or multiple handicaps. At each grade level, students with mental retardation who took more regular education had lower GPAs. The correlations were from -.16 to -.31 between GPA and time in regular education for the four grade levels (p<.001). For students with multiple handicaps, the pattern held only for 9th- and 10th-graders, with correlations of -.22 (p<.01) and -.26, respectively (p<.001).

The average percentage of courses failed showed no relationship to time in regular education courses for all regular education courses combined or for vocational courses. However, for academic regular education courses, as the amount of time in regular education courses increased, the student's likelihood of getting an F also increased. Students with 10% or less time in regular academic courses failed 7% of their courses, on the average. Students with 51% or more failed 9% (r between time in regular academic courses and percentage of courses failed = .04, p<.05). Interestingly, this pattern held only for students with mental retardation (r = .22, p<.001) or orthopedic impairments (r = .13, p<.05) when the disability groups were examined individually. For students with visual impairments, the pattern was just the opposite: the likelihood of receiving a failing grade decreased with more time in regular education academics (r = -.33, p<.001).

Overall, students with more time in regular education were absent fewer days than students with less time in regular education (r = -.05, p<.01). This relationship held individually only for students with learning disabilities or visual impairments (r = -.20 and r = -.31, p<.001). For students with other health impairments, the relationship was in the opposite direction: students with other health impairments who were in regular education more often were absent more often (r =.18, p<.05).

The relationship between dropping out and the percentage of time in regular education and in regular academic courses is shown in Figure 4-3. One could hypothesize that students with disabilities who spent more time in regular education courses, especially regular education academics, might drop out of school more often because of difficulties encountered in their regular education classes. In fact, there was no bivariate relationship between dropping out and time in regular education or academic regular education.



Based on students in regular comprehensive high schools.
Note: Grade-level data refer to students who completed or dropped out at that grade level.
Standard errors are in parentheses.
Sources: 1990 student transcripts; 1987 student record abstracts.

FIGURE 4-3 AVERAGE TIME IN REGULAR EDUCATION FOR STUDENTS WHO COMPLETED GRADE LEVEL OR DROPPED OUT

To examine the relationship between time in regular education and student outcomes, independent of other factors, several multivariate analyses were conducted, based on the conceptual framework presented in Chapter 1. Three outcome measures were examined: days absent, receipt of failing grades, and dropping out. Four grade-level models were developed to examine the relationships of several independent variables, including time in regular academic education, to student outcomes at each of the four secondary grade levels. Time in regular academic classes was selected as the regular education variable because this setting was considered to be the one most likely to affect student outcomes. The reader interested in more detailed information about the structure and findings from the models is referred to Chapter 5 in Wagner, Blackorby, and Hebbeler (1993).

A variety of variables, including disability-related factors, functional skills, demographic characteristics, family characteristics, student behaviors, prior school performance, school program and school characteristics, were found to be related to one or more of the three outcome measures at one or more grade levels. The estimated change in each of the outcome measures for different levels of regular education is shown in Table 4-7. The numbers indicate the estimated change in outcome (days absent or percentage points) between two groups that were identical on all other factors in the model except for time in regular education.

With other factors held constant, more time in regular academic education was found to be related to higher absenteeism from school and to a higher likelihood of receiving a failing grade, independent of other differences between students. The relationship between time in regular education and days absent was statistically significant, but not very strong. Furthermore, it was in opposite directions in the two out of four grade levels in which it appeared. In 9th grade, students who spent most of their time in regular education courses missed one-half day of school less than students who spent half their time in regular education ($p<.05$). In 12th grade, students who spent most of their time in regular education missed .7 of a day more of school ($p<.01$) than those in regular education half the time.

Stronger and more consistent relationships with regular academic education were found for the receipt of a failing grade. With other factors controlled, 9th-graders who spent most of their time in regular education were 10 percentage points more likely to receive a failing grade than their peers who spent half their time in regular education ($p<.001$). For students in 10th and 11th grades, the differences were 4 and 3 percentage points, respectively ($p<.001$). For 12th-graders, the difference was not statistically significant. The grade-level differences may reflect the differences in course requirements for lower and upper classmen, with 9th-graders being required to take academic classes and 12th-graders electing to take them. Also, by 12th grade many of the poorest students had dropped out of school.

Table 4-7

ESTIMATED CHANGE IN SCHOOL PERFORMANCE FOR TIME IN ACADEMIC REGULAR EDUCATION, BY GRADE LEVEL

Estimated Change in:		Grade 9	Grade 10	Grade 11	Grade 12
Absences (average number of days absent)		-.5*	.1	.0	.7**
	n	1,326	1,126	1,191	1,065
Failure (percentage points)		10.0***	3.7***	3.1***	1.9
	n	1,321	1,125	1,186	1,056
Dropout (percentage points)		.2	.0	.2	.0
	n	1,596	1,491	1,449	1,365

Note: Increment for regular education was 6 vs. 3 classes.
* $p<.05$; ** $p<.01$; *** $p<.001$

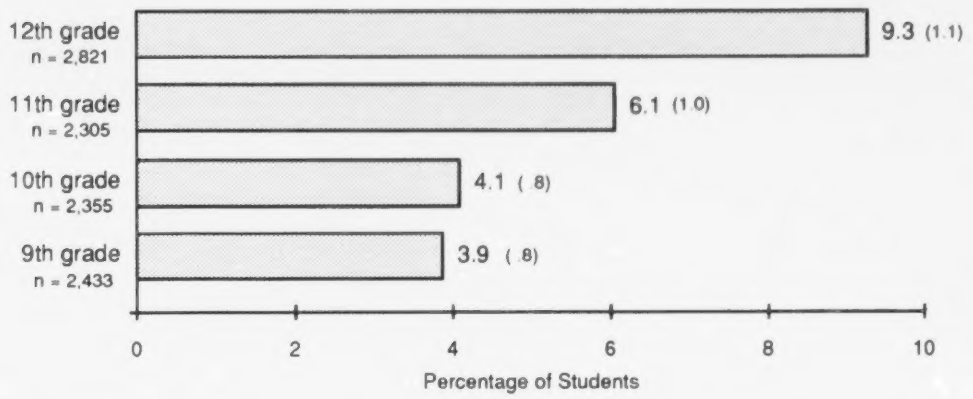
No independent direct relationships were found at any grade level between time in regular education and dropping out of school. However, by increasing the probability of course failure, time in regular education contributes indirectly to a higher dropout rate. Course failure was among the strongest predictors of dropping out of any variable examined. Twelfth-graders who had previously failed a course were estimated to be 15 percentage points more likely to drop out of school than those who had not failed a course.

In conclusion, controlling for differences in student and school characteristics, we see that students with more time in regular education were more likely to receive a failing grade. Regular academic education is clearly a challenging environment. We cannot tell from this finding, however, whether the students who failed were not able to master the content of the regular academic courses or did not receive sufficient support to allow them to do so.

Who Succeeded?

Before leaving the topic of achievement in the regular classroom, we will take a brief look at the students who did well. Were there students with disabilities who succeeded in the regular courses in comprehensive secondary schools? Who were these students? To answer these questions, we defined success in regular education as spending 75% or more of time in regular education classes and earning a 3.0 or higher grade point average (i.e., a B average) and looked at who met these criteria.

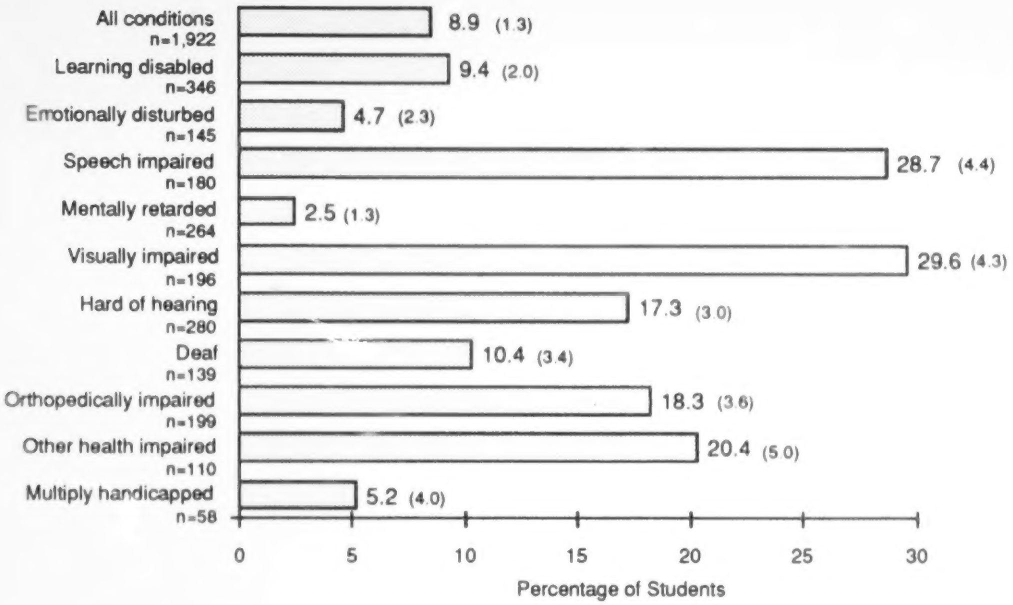
There were students with disabilities who were educated primarily in the regular classroom and achieved success there, although they were a minority of each of the disability groups. For all disability groups combined, about 9% of students with disabilities achieved success in regular education over their entire high school career. The data for students at different grade levels further emphasize the difficulties students encountered in the early years of high school. Only 4% of 9th-graders met the criteria for success. Among 12th-graders, it was more than 9% *(see Figure 4-4)*.



Based on students who attended regular high schools.
Note: Success was defined as 75% or more time in regular education and a GPA of 3.0 or more. Standard errors are in parentheses.
Sources: 1990 student transcripts; 1987 student record abstracts.

FIGURE 4-4 STUDENTS WHO SUCCEEDED IN REGULAR EDUCATION, BY GRADE LEVEL

As we have already learned, students with some disabilities fared much better in regular education than others. As shown in Figure 4-5, 30% of students with visual impairments and a similar percentage of students with speech impairments spent the overwhelming majority of their time in regular classes and earned a high GPA during high school. Approximately one-fifth of students who were classified as hard of hearing, orthopedically impaired, or other health impaired also experienced success in high school programs consisting of mostly regular classes.



Based on students who attended regular high schools and had complete data for grades 9-12.
Note: Success was defined as 75% or more time in regular education and a GPA of 3.0 or more.
Standard errors are in parentheses.
Source: 1990 student transcripts.

FIGURE 4-5 STUDENTS WHO SUCCEEDED IN REGULAR EDUCATION, BY DISABILITY

The numbers were smaller for the other disability groups. Five percent or fewer of students with serious emotional disturbances, mental retardation, or multiple handicaps met the criteria for success in regular education. The students with serious emotional disturbances took regular education courses in substantial numbers, but they did not earn good grades. Very few students with mental retardation or multiple handicaps spent 75% of their time in regular education.

No differences were found among students of different genders, ethnic backgrounds, or household incomes with regard to succeeding in regular education. White students were more likely than African American students to be in regular education three-fourths of the time or more (52% vs. 38%, p<.05), but there were no differences in the percentage of students who were in regular education and received good grades (10% vs. 6%). Similarly, higher-income students were more likely to be in regular education 75% or more of the time (62% vs. 37%, p<.001), but significantly greater percentages did not perform well there (14% vs. 7%).

Social Activities and Regular Education

Not all of secondary school is courses and grades. An important part of the adolescent experience is social: seeing friends, playing sports, joining clubs. Part of the rationale behind promoting the inclusion of students with disabilities in regular education is the promotion of social development. In theory, by providing students with disabilities opportunities for interaction with peers without disabilities, both groups can profit by coming to know people who are not like themselves. Does being in regular education courses convey social benefits to students with disabilities? In this section, we examine the relationship between time in regular education and social isolation, getting together with friends, and membership in groups. Regular education is examined with regard to whether or not the students attended a special school, and the percentage of time in regular education.

The findings on social activities are based on information collected during 1987, when the largest number of students in the study were in secondary school. The data on friendships and group activities were collected through parent interviews. The regular education data reported were for the student's most recent year in school at that time (1985-86 or 1986-87) and were collected from student records on a school record abstract form. Students in both regular and special schools were included in the analysis.*

Social Isolation

Parents of students still in secondary school in 1986-87 were asked to report how many days a week their son or daughter typically got together with friends outside of school. We used the term "socially isolated" to describe youth who got together with friends less often than once a week outside of school. Overall, only 14% of students with disabilities were reported never to see friends outside of school or to see them less often than once a week. Substantial variations were found between disability groups, however, with one-fourth or more of youth with mental retardation, orthopedic impairments, multiple handicaps, or deaf/blindness reported to get together with friends less often than once a week.

Students in special schools were more likely to be socially isolated. Thirty-four percent of special school students saw friends less often than once a week or never, compared with 11% for students in general schools and 18% for those attending vocational or technical schools. These data are not surprising, given that youth with more severe impairments attended special schools and these youth tended to be more socially isolated. The independent effect of special school attendance is addressed in the multivariate analysis described below.

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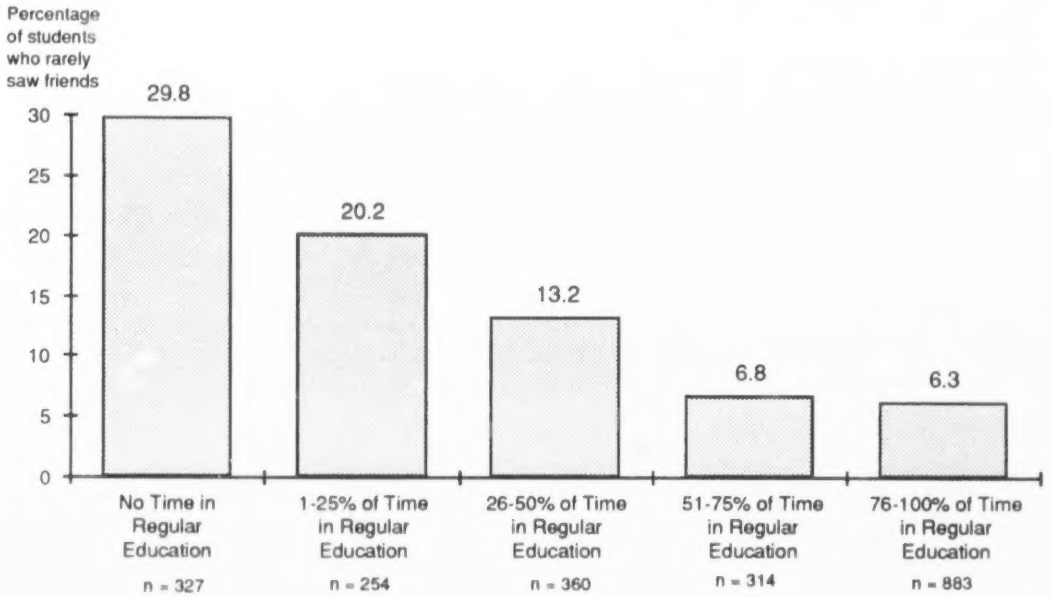
* See Newman (1991) for a complete discussion of social activities and their relationship to regular education and other factors in the lives of youth with disabilities.

As seen in Figure 4-6, there was a direct relationship between time in regular education and social isolation. Whereas 30% of students who spent no time in regular education were reported by their parents to get together with friends infrequently, only 6% of those who spent more than three-fourths of their day in regular education were similarly isolated.

Time in regular education is, as we have seen, related to many other factors, including, for example, the level of the student's functioning. Both functional mental and self-care skills were strongly related to social isolation, with higher-functioning students being 5 to 7 times less likely to be socially isolated. A multivariate analysis showed that students with more time in regular education classes were found to be less likely to be socially isolated, even when the effects of disability, skill level, demographic, community, and other school factors were held constant. Other factors being equal, students with six classes in regular education were 4 percentage points less likely to be socially isolated than those with three classes in regular education. With other factors controlled, there was no independent relationship between social isolation and attending a special school. Disability played a stronger role in social isolation than did regular education, with students with severe impairment being 20 percentage points more likely to be isolated than students with learning disabilities. Nevertheless, independent of all other effects, students with more time in regular education were less likely to be socially isolated.[*]



Based on students in regular high schools.
Sources: Data on friendship interactions from parent interviews; placement data from students' school records.

FIGURE 4-6 SOCIAL ISOLATION AND TIME IN REGULAR EDUCATION

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[*] Unmeasured student characteristics, as described in Chapter 3, could be contributing to this relationship.

Getting Together with Friends

Most youth with disabilities were not socially isolated, and those who saw friends varied in how frequently they saw them. Among those who saw friends more often than once a week, 39% overall got together with friends 6 or 7 times a week. Students with serious emotional disturbances got together with friends most often, with nearly half seeing their friends 6 or 7 times a week. Youth least likely to see friends often were those with orthopedic impairments (25%) or multiple handicaps (27%), or those who were deaf/blind (25%). Although not having friends is a negative outcome, seeing friends very often may not have been a completely positive one. One can question what young people did with time spent with friends, as well as whether they had enough time to attend to other activities, such as homework. Being too social could be just as detrimental as being socially isolated.

Table 4-8 shows the relationships between the frequency of getting together with friends and two regular education variables, special school attendance and time in regular education during the student's most recent year in school. The relationships between these same factors also were examined in a multivariate analysis to control for disability, demographic, and community factors. It appears from the data in Table 4-8 that students in special schools got together with friends less often than students in other schools. However, with the confounding effects of disability and other factors controlled, we learn that students in special schools

Table 4-8

RELATIONSHIP BETWEEN REGULAR EDUCATION AND FREQUENCY OF SEEING FRIENDS

School Characteristics	Percentage Who Saw Friends: Regularly (1-5/week)	Often (6-7/week)	S.E.	n
Type of school attended				
Special school	65.9	34.1	6.1	675
General school	60.8	39.2	2.3	2,180
Other	60.0	40.1	11.2	92
Percentage of day youth spent in regular education classrooms*				
None	62.6	37.4	5.4	697
1% to 25%	69.4	30.6	7.4	212
26% to 50%	55.2	44.8	6.1	314
51% to 75%	64.8	35.2	5.6	290
76% to 100%	65.5	34.5	3.9	819

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* Excludes students in special schools.

Sources: 1987 parent interviews; 1987 school record abstracts.

actually got together with friends more frequently than students in other schools. When disability and other factors were held constant, students in special schools were 9 percentage points more likely to see friends frequently. No relationship was found between time in regular education classes and frequency of seeing friends with other factors controlled. Other findings from this analysis confirm the difficulty of interpreting whether seeing friends frequently is a positive or negative social outcome and for whom. Another strongly related factor was whether or not the youth had disciplinary problems. Youth with disciplinary problems were 13 percentage points more likely to see friends frequently. Additional research is needed to take a finer look at how youth with disabilities spent their time outside of school and in what way, if any, these activities were related to time in regular education.

Group Participation

Parents of youth with disabilities were asked whether their child had belonged to any school or community group in the previous year. Parents reported that 41% of youth who had been in secondary school that year belonged to some kind of group. Most of these students (66%) belonged to one group, although 28% participated in two and 6% participated in three or more groups. Disability groups with high rates of group membership were students with deafness (59%), visual impairments (51%), speech impairments (50%), hearing impairments (46%), or learning disabilities (45%).

Confirming other research on the positive outcomes associated with group membership (Pittman and Haughwout, 1987), the NLTS has found that students who belonged to groups had lower absenteeism, a lower probability of course failure, and a reduced likelihood of dropping out of school, with disability, demographic, and other factors held constant (Wagner, 1991b; Wagner, 1991c). It remains unclear whether more competent youth joined groups and also were the ones to experience more positive outcomes, or whether group membership in and of itself contributed to good outcomes. Nevertheless, the data are unequivocal in showing that students with disabilities who belonged to groups while in secondary school had better outcomes than those who did not.

In simple bivariate relationships, students in regular high schools were more likely to belong to groups than were students in special schools (43% to 32%, $p<.01$). This difference may reflect the greater number of students with severe impairments in special schools and/or the reduced opportunities for group membership. However, as with frequency of seeing friends, controlling for student and community factors in the multivariate analysis, special school students were found to be 11 percentage points **more** likely to belong to a group.

A relationship was also found between time in regular education and group membership. About one-third of students with 50% or less of their time in regular education belonged to groups, compared with 55% of those who spent 75% or more of their day there. With disability and other factors controlled, students with more time in regular education were still found to be more likely to belong to a group. Students with six regular education classes were 4 percentage points more likely to belong to a group than those with three regular education classes ($p<.05$). Possibly, regular education provides opportunities for group membership through friendship networks, access to information, or teacher encouragement. Alternatively, perhaps the students socially most active in ways not measured by the study are in regular education more and join more groups.

Summary

In this chapter, we looked at how time in regular education was related to other aspects of the high school experience—specifically, performance and social activities. We have seen that regular education academic classes in grades 9 and 10 present the greatest challenges for students with disabilities. Students with disabilities earned the lowest GPAs and had the highest percentage of Fs at these grade levels. Students with disabilities performed better in special education classes than in regular education, but a surprisingly large number of students failed special education courses too. Across all disability groups, students with emotional disturbances experienced the greatest difficulties in both special and regular education courses. Some students with disabilities appeared to experience difficulty regardless of setting, other students were able to perform better in some settings than others, and some students succeeded in even the most difficult settings. Nearly one-third of students with visual impairments and students classified as speech impaired spent 75% or more of their time in high school in regular education and maintained a B average or better.

An examination of the relationship between performance and time in regular education showed that as time in regular education went up, so did the student's likelihood of getting an F. For students classified as mentally retarded, those with more time in regular education had lower GPAs at every grade level in high school. Students with more time in regular education were less likely to be absent in 9th grade but more likely to be absent in 12th grade. No relationship was found between dropping out of school at any grade level and time in regular education.

The NLTS has found that time in a regular education environment is related to several social outcomes. One of these, belonging to a group, is related to several other positive outcomes. There was no relationship between special school attendance and social isolation, but isolation was found to be less common among those who took more regular education courses. Those who attended special schools were more likely to get together with friends frequently. No relationship was found for seeing friends frequently and time in regular education. Seeing friends frequently may not necessarily be a positive outcome, however, because it was associated with having had disciplinary problems such as being expelled or fired from a job. By contrast, belonging to a group is associated with a plethora of good outcomes, including reduced rates of course failure and dropping out of school. Both special school students and students in regular schools with more time in regular education were more likely to belong to groups.

5 POSTSCHOOL OUTCOMES AND REGULAR EDUCATION

Having taken a look at regular education during high school, we turn the clock forward to the first 3 years after school. Through the power of longitudinal data collection, we can examine what happened to young people when they left high school and the role regular education in secondary school played in promoting better postschool outcomes for young adults with disabilities.

In this chapter, we examine the relationship between time in regular education in secondary school and four postschool outcomes:

- Postsecondary education—enrollment in either an academic program (in a 2- or 4-year college) or a vocational program (in a 2-year college or vocational school).
- Employment—having a competitive paid job and the total amount of compensation received in the job.
- Residential independence—living alone, with a spouse or roommate, in a college dormitory, or in military housing (not as a dependent).
- Community participation—a composite measure of the extent to which youth were engaged outside the home in school or work, lived independently, and were socially involved.

Additional information about each of these measures is provided in the section of the chapter discussing the particular measure. Within each section, the simple bivariate relationship between time in regular education and the outcome measure is presented, followed by the results of several multivariate analyses that control for disability, personal, demographic, and school characteristics. Outcomes were measured for students who were in their first 3 years out of high school. All analyses in this chapter include students with disabilities in regular high schools and in special schools.

Multivariate analyses were conducted for all youth combined, and for youth in four disability clusters: mild, sensory, physical, and severe. The disability clusters were constructed to examine whether relationships between in-school and postschool factors were consistent for different disability groups.* The mild cluster consisted of youth with learning disabilities, serious emotional disturbances, speech impairments, or mild mental retardation. The sensory disability cluster was youth with hearing or visual impairments. The physical disability cluster was youth with orthopedic or other health impairments. Youth who were deaf/blind, youth with moderate or severe retardation, and youth with multiple handicaps comprised the severe cluster. Additional information about the construction of the models and related findings is presented in Wagner et al. (1993).

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* It would have been preferable to conduct separate analyses for each disability group; however, insufficient sample sizes did not permit it.

The regular education measure used in these analyses is percentage of time in regular education. For students with less than 4 years of transcript data, the percentage was based on however many years were available. A related variable in the models measured whether youth had taken college preparatory courses (advanced math or foreign language) in high school, a specific type of regular education course. After describing the relationship between time in regular education and each of the outcome measures, we examine how taking college prep courses was related to postschool outcomes.

The reader is again reminded that several interpretations are consistent with the findings from the multivariate analysis. In developing the models, we included all other measured factors hypothesized or known to be related to the outcome measures for which NLTS data were available. Statistically significant results mean that regular education was related to the outcome, independent of the **other factors in the model**. The problem of unmeasured student characteristics was discussed in Chapter 3 and is especially relevant to the findings in this chapter. Regular education may not be a cause of better outcomes, but may be simply associated with more competent students who went on also to experience more success after school (in ways we did not measure).

Postsecondary Education

Previously reported NLTS analyses have shown that youth with disabilities pursued additional education after high school at a rate far below that of the general population (Marder, 1992). In the first 3 years after high school, 16% of students with disabilities had enrolled in an academic postsecondary school and 15% had enrolled in a postsecondary vocational school. There were striking differences between disability groups, however. Among students with visual impairments, 54% had enrolled in academic postsecondary education, compared with 19% of students with learning disabilities (Table 5-1). Twenty percent or more of students with other health impairments or hearing impairments were enrolled in vocational programs, but this was true for fewer than 6% of youth with mental retardation or multiple handicaps.

Two measures of postsecondary education enrollment are considered here:

- Enrollment in an academic program—whether at any time since the youth left high school s/he had been enrolled in a 4-year college or in a 2-year college program the parent or youth described as primarily academic.

Table 5-1

POSTSCHOOL OUTCOMES, BY DISABILITY CATEGORY

	All Conditions*	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Hard of Hearing	Deaf	Orthopedically Impaired	Other Health Impaired	Multiply Handicapped
Percentage enrolled in postsecondary academic program since high school	16.5 (2.1)	18.7 (3.3)	15.3 (4.7)	37.0 (6.6)	2.5 (1.6)	53.9 (4.9)	35.0 (4.8)	28.3 (4.3)	30.9 (5.5)	35.1 (7.4)	8.0 (4.0)
Percentage enrolled in postsecondary vocational program since high school	14.7 (2.0)	17.8 (3.2)	13.3 (4.4)	17.9 (5.3)	5.7 (2.4)	14.9 (3.5)	20.0 (4.1)	19.9 (3.8)	13.4 (4.0)	23.5 (6.5)	4.0 (2.9)
Percentage currently competitive employed	55.0 (2.8)	63.1 (4.1)	52.0 (6.5)	58.5 (6.7)	40.8 (5.0)	30.3 (4.5)	43.6 (5.0)	24.8 (4.0)	26.4 (5.2)	47.5 (7.6)	15.8 (5.2)
Average total compensation (dollars, all youth)	5,524 (429)	6,932 (724)	5,310 (926)	4,389 (829)	3,078 (490)	2,027 (448)	2,773 (489)	1,689 (387)	1,636 (467)	4,388 (954)	778 (332)
Average total compensation (dollars, workers)	10,840 (557)	11,671 (808)	11,267 (1,023)	8,145 (1,087)	8,274 (701)	7,303 (.)	7,596 (811)	8,897 (906)	7,586 (.)	9,723 (.)	--
Percentage living independently	27.8 (2.5)	33.9 (4.0)	21.1 (5.1)	36.4 (6.3)	14.8 (3.5)	39.3 (4.7)	25.9 (4.4)	32.3 (4.3)	16.6 (4.3)	17.2 (5.7)	8.0 (3.9)
Percentage fully participating on three dimensions (Profile A)	16.7 (2.1)	20.6 (3.4)	11.1 (4.1)	27.4 (6.2)	6.9 (2.6)	28.7 (4.4)	19.4 (4.0)	18.1 (3.6)	7.3 (3.1)	11.6 (5.0)	2.8 (2.4)
Percentage fully participating on two dimensions (Profile B)	47.8 (2.8)	53.3 (4.2)	44.7 (6.5)	51.2 (6.9)	35.4 (4.9)	44.0 (4.9)	37.2 (5.8)	39.3 (4.6)	37.2 (5.8)	53.2 (7.8)	22.8 (6.1)
Percentage not active in the community (Profile E)	18.2 (2.2)	14.2 (3.0)	21.2 (5.4)	10.2 (4.2)	28.9 (4.7)	14.1 (3.4)	12.2 (3.3)	28.9 (4.3)	26.8 (5.3)	10.5 (4.8)	30.5 (6.6)
n	1,763	265	119	115	188	235	211	253	161	101	100

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* "All conditions" includes youth in each of the 11 federal special education disability categories. Percentages are reported separately only for categories with at least 25 youth.

- Enrollment in a vocational program—whether at any time since the youth left high school s/he had been enrolled in a postsecondary vocational school (public or private) or in a 2-year college program the parent or youth described as primarily vocational.

A large majority, 70%, of students with disabilities who went on to postsecondary academic programs spent 75% or more of their time in high school in regular education. As shown in Table 5-2, only 7% of those who went on to postsecondary academics spent less than 25% time in regular education classrooms during high school. Among those who did not enroll in postsecondary academics, 45% had been in regular education for three-quarters or more of their school day.

No relationship is apparent between pursuing additional vocational training after high school and time in regular education. The distribution of time in regular education is similar for those who did and did not take postsecondary vocational courses. Of those who furthered their education through postsecondary vocational training, 53% had spent three-fourths or more of their time in high school in regular education. Among those who did not go on, the figure was 49%.

Table 5-2

REGULAR EDUCATION PARTICIPATION AND POSTSECONDARY SCHOOL ENROLLMENT

	Students Taking:			
	Postsecondary Academic Courses		Postsecondary Vocational Courses	
	Yes	No	Yes	No
Percentage of youth with time in regular education of:				
0% - 25%	7.2	19.2	17.3	17.2
	(3.7)	(2.4)	(5.6)	(2.3)
26% - 74%	22.5	35.8	29.5	34.3
	(6.1)	(2.9)	(6.8)	(2.9)
75% - 100%	70.3	45.0	53.2	48.5
	(6.6)	(3.1)	(7.4)	(3.1)
n	524	1,254	282	1,497

Based on students in regular and special schools with at least one year of course data.

Standard errors are in parentheses.

Sources: 1990 student transcripts; 1987 school record abstracts; postsecondary data from 1990 parent/youth interviews.

The results of the multivariate analysis indicated that, for the most part, there was no relationship between time in regular education in high school and pursuit of either type of postsecondary education when other factors were controlled.[*] The data in Table 5-3 show the estimated difference in the probability of attending postsecondary schools between students who spent all their time in regular education and students who spent half their time there. For all disability groups, the attendance rate at postsecondary academic institutions among those who spent 100% of their time in regular education was estimated to be 4% higher than the attendance rate among those who spent 50% of their time in regular education, when disability and other factors were controlled. (The analysis actually involved all levels of regular education, but the 100% and 50% points were selected as exemplars to illustrate the magnitude of the estimated difference in postsecondary attendance.) The 4% difference is in the predicted direction in that it favors those who spent more time in regular education, but it is not large enough to be statistically significant.

Table 5-3

ESTIMATED CHANGE IN POSTSECONDARY EDUCATION ASSOCIATED WITH PERCENTAGE OF TIME SPENT IN REGULAR EDUCATION CLASSES

		Youth with Disabilities			
	All Youth	Mild	Sensory	Physical	Severe
Postsecondary academic education (percentage points)	4.2	7.2	-0.6	19.2	-2-3
n	1,208	490	429	163	127
Postsecondary vocational education (percentage points)	3.2	10.4**	-4.0	15.0	3.3
n	1,208	489	429	163	127

Increment for comparison is youth who spent all of their instructional time in regular education classes vs. those who spent half their time there.

** p<.01

The lack of difference in postsecondary attendance for those with different levels of regular education suggests that the apparent differences seen in the data in Table 5-2 are due to factors associated with regular education participation, rather than to regular education itself. We know that family income is associated with postsecondary academics and also with time in regular education (Wagner et al., 1993). When family income and other factors were controlled for, no relationship was found between regular education and postsecondary attendance for all disability groups combined.

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[*] The other factors in the model were: disability, functional mental skills, self-care skills, gender, ethnicity, family income, one- or two-parent household, years out of high school, being a mother, being a father, whether attended special school, whether took a concentration in vocational education, whether took a survey course in vocational education, whether took advanced math or foreign language, whether dropped out, work experience (yes or no), how often saw friends, whether belonged to group, proportion of student body from families below poverty level, and parental expectations.

Similarly, most of the disability clusters showed no statistically significant relationships. The notable exception was vocational education enrollment for students with mild impairments. For these students, those who spent all of their time in regular education classes were 10 percentage points more likely to enroll in postsecondary vocational education than were those who spent 50% of their time in regular education, with other factors controlled. Although fewer than 20% of these students pursued postsecondary vocational education, more time in regular education may have paved the way for more education for those who did.

The pattern of results for students with physical impairments merits a comment. For neither type of postsecondary education was there a statistically significant relationship to regular education; however, the magnitude of the differences was large, and the direction of the effect was the same. The small sample size precluded finding statistically significant differences, but the consistency and size of the estimated change suggest that time in regular education could have contributed to higher postsecondary educational enrollment for those with physical disabilities.

Employment

Youth with disabilities were found to be employed at a rate far below that of their age peers in the general population (Marder, 1992). Slightly more than half, 55%, of youth with disabilities were competitively employed when they had been out of school up to 3 years. As with postsecondary education attendance, there were tremendous differences between youth with different disabilities in the rates at which they were able to find competitive employment (Table 5-1). At the high end were youth classified as learning disabled, 63% of whom were competitively employed. At the low end were youth with multiple handicaps or deafness, with employment rates of 16% and 25%, respectively.

Two dimensions of employment were considered in relation to regular education:

- Whether the youth currently held a competitive job outside the home for which s/he was paid (sheltered, supported, and volunteer work were not included as competitive paid employment).
- An estimate of the annual total compensation youth received for their work. Unemployed youth were considered to receive no compensation. Estimates for paid workers involved multiplying the reported hours typically worked per week by the reported hourly wage; a typical work year was assumed to involve 49 work weeks for those who did not receive paid sick leave or vacation. For workers who received paid sick leave and vacation, the work year, for purposes of calculating total compensation, was assumed to include 52 paid weeks. Medical insurance received as an employment benefit was valued at 6.1% of wages, as commonly calculated by the U.S. Bureau of the Census (1990).

As shown in Table 5-4, among youth with disabilities who were currently employed, 56% had spent more than three-fourths of their time in regular education during high school. Among those not employed, only 41% had spent 75% or more time in regular education during high school. Only 10% of those currently employed had been in regular education less than one-quarter time. For those without employment, 26% had been in regular education less than one-quarter of the time. The data for annual compensation showed no relationship with time in regular education for those making more or less than $10,000 annually.

Table 5-4

REGULAR EDUCATION AND EMPLOYMENT

	Currently Employed		Annual Compensation		
	Yes	No	None	<$10,000	≥$10,000
Percentage of youth with time in regular education of:					
0% - 25%	10.1	25.6	25.6	14.9	5.8
	(2.2)	(3.7)	(3.7)	(4.0)	(2.7)
26% - 74%	33.5	33.1	33.1	34.9	34.9
	(3.5)	(4.0)	(4.0)	(5.3)	(5.5)
75% - 100%	56.4	41.2	41.2	50.1	59.4
	(3.7)	(4.2)	(4.2)	(5.5)	(5.7)
n	766	1,049	1,049	383	246

Based on students in regular and special schools with at least one year of course data.

Standard errors are in parentheses.

Sources: 1990 student transcripts; 1987 school record abstracts; employment data from 1990 parent/youth interviews.

In multivariate analyses, with other factors controlled, time in regular education was positively related to the likelihood of youth with disabilities' being competitively employed in the first 3 years after high school (Table 5-5). For all disability groups, youth who spent all of their time in regular education were 11 percentage points more likely to have a job than those who spent half their time in regular education (p<.01). However, results for the disability clusters show that this finding applied only to those with sensory or physical impairments. For youth with visual or hearing impairments, more regular education was associated with a 15 percentage point difference in employment (p<.05). The effect for youth classified as orthopedically impaired or other health impaired was especially striking. Those who spent 100% of their time in regular education were estimated to have a 43% higher probability of employment than those who spent 50% of their time there (p<.01).

Table 5-5

ESTIMATED CHANGE IN EMPLOYMENT OUTCOMES ASSOCIATED WITH PERCENTAGE OF TIME SPENT IN REGULAR EDUCATION CLASSES

			Youth with Disabilities			
		All Youth	Mild	Sensory	Physical	Severe
Competitive employment (percentage points)		11.2 **	1.9	15.0 *	43.2 **	-4.1
	n	877	512	445	165	133
Total compensation (average dollars earned)		2,095 ***	683	1,550 **	1,664 *	755
	n	793	454	405	150	128

Increment for comparison is youth who spent all of their instructional time in regular education classes vs. those who spent half their time there.

Youth attending postsecondary institutions were excluded from the model for "all youth" but not from the disability cluster model.

* p<.05; ** p<.01; *** p<.001

The pattern for annual compensation was identical to that for employment. For youth with disabilities combined, those with 100% time in regular education were estimated to earn an annual compensation that was $2,100 higher than those with 50% time in regular education, independent of other factors (p<.001). When the data were examined separately for different disability clusters, the positive relationship to time in regular education again was found for those with sensory impairments or physical impairments. For the former, the compensation differences between high and low regular education was $1,550 annually (p<.01). For those with physical impairments, a difference of $1,664 was estimated (p<.05).

Interestingly, no effect for regular education was found for those with mild impairments, the group with the highest rate of employment, or those with severe impairments, the group with the lowest rate. Possibly, the employment prospects of those with sensory or physical impairments were the most susceptible to facilitating factors. Those with mild impairments did relatively well at getting jobs; they may not have needed the extra edge provided by more time in regular education. Also, students with mild impairments had some of the highest enrollment and course failure rates in regular education, suggesting that additional time in this setting may not have provided long-term benefits for them. Those with severe impairments may have faced so many barriers to finding competitive employment that the benefits that may have accrued from extra time in regular education were not enough to overcome them. For those with sensory or physical impairments, the additional time in regular education may have provided the higher academic challenge and/or the increased socialization experience to enable them to find competitive employment.

Residential Independence

A mark of independence in the life of a young adult is moving out of one's parents' house and setting up a home of one's own. This is a choice not available to many young people with or without disabilities today because of the high cost of maintaining a household and the relatively low wages paid to those recently out of high school. For others, it is a choice they can afford but choose not to exercise. The NLTS found that only 28% of youth with disabilities up to 3 years out of high school were living independently (Table 5-1). The NLTS defined independent living as living alone, with a spouse or roommate, in a college dormitory, or in military housing (not as a dependent). Students classified as visually impaired had the highest percentage of youth living independently, 39%, which is due in part to their relatively high attendance at postsecondary schools. Groups with especially low rates of independent living in the 3 years after high school were those with multiple handicaps (8%), mental retardation (15%), orthopedic impairments, or other health impairments (both 17%).

Two-thirds of those living independently after high school had participated in regular education 75% or more of their time in high school. As shown in Table 5-6, this compares with only 43% of those who were not living independently (p<.001). At the other extreme, among those living independently, only 9% had been in regular education 25% or less. For those not living independently, the figure was 21% (p<.01).

Table 5-6

INDEPENDENT LIVING AND REGULAR EDUCATION

	Lived Independently	
	Yes	No
Percentage of youth with time in regular education of:		
0% - 25%	8.7 (2.9)	20.7 (2.6)
26% - 74%	25.6 (4.4)	36.6 (3.1)
75% - 100%	65.7 (4.6)	42.7 (3.2)
n	552	1,316

Standard errors are in parentheses.

Source: 1990 student transcripts; 1987 school record abstracts; living arrangements from 1990 parent/youth interviews.

However, with other factors controlled, there was no relationship between regular education and independent living. This means that time in regular education was associated with other factors related to independent living, particularly disability, and when those factors were held constant, those with more time in regular education were not found to be more likely to be living on their own. However, the relationship approached significance in the expected direction for those with mild impairments ($p<.10$).

Table 5-7

ESTIMATED CHANGE IN RESIDENTIAL INDEPENDENCE ASSOCIATED WITH PERCENTAGE OF TIME SPENT IN REGULAR EDUCATION CLASSES

			Youth with Disabilities			
		All Youth	Mild	Sensory	Physical	Severe
Independent living (percentage points)		5.4	10.0 †	-0.6	19.0	-6.3
	n	1,227	498	405	167	127

Increment for comparison is youth who spent all of their instructional time in regular education classes vs. those who spent half their time there.
† $p<.10$

Community Participation

Each of the outcome measures presented above represents only a single dimension of life for young adults. To take a more comprehensive look at postschool outcomes for young adults with disabilities, the NLTS developed an outcome measure that combined these multiple dimensions. This measure, referred to as "life profiles," measures the extent to which youth with disabilities participated in three arenas:

- Engagement in work- or education-related activities outside the home. Were youth engaged in work, schooling, or job training? To what extent (i.e., full time, part time, volunteer work, sheltered jobs)?
- Residential arrangements. Were youth living independently? With family members? In institutions?
- Social activities. Were youth socially isolated—not seeing friends, belonging to groups, or establishing relationships through engagement or marriage?

The NLTS measure of youths' general community participation captures the extent to which youth were participating across these dimensions (e.g., participating on engagement and residential dimensions vs. the engagement dimension alone) and indicates how independently youth were functioning on a particular dimension (e.g., whether youth were working full time for pay vs. doing volunteer work; whether youth were living independently or in supervised settings).

Before examining the relationship between regular education and the life profiles, we first look at the findings for some of the individual components that make up the profiles. We have already examined postsecondary education, employment, and independent living separately. In the years immediately after high school, some youth found jobs, others went to school, and others did both. We have seen that 17% of youth with disabilities were enrolled in postsecondary academics in the 3 years after high school, 15% were in vocational training, and 55% were currently employed. Eighty percent of youth with disabilities were involved in one of the three. The relationship between being employed or in school and the time spent in regular education is shown in the first column of Table 5-8. Among those employed or in school, 53% had spent 75% or more time in regular education. The comparable figure for those neither employed nor in school was 39%. Sixteen percent of those employed or in school had been in regular education less than 25% of the time, compared with 20% for those engaged in neither activity. None of these differences was statistically significant.

Table 5-8

DIMENSIONS OF COMMUNITY PARTICIPATION AND REGULAR EDUCATION

	Employed or in School		Socially Isolated		Married or Engaged	
	Yes	No	Yes	No	Yes	No
Percentage of youth with time in regular education of:						
0% - 25%	16.3	20.3	30.6	16.1	10.3	18.7
	(2.3)	(5.7)	(11.0)	(2.1)	(4.1)	(2.4)
26% - 74%	30.7	41.0	43.4	32.7	33.4	33.2
	(2.9)	(6.9)	(11.8)	(2.7)	(6.3)	(2.9)
75% - 100%	53.0	38.7	26.0	51.2	56.3	48.1
	(3.2)	(6.9)	(10.4)	(2.9)	(6.6)	(3.1)
n	1,358	353	150	1,631	224	1,598

Based on students in regular and special schools with at least one year of course data

Standard errors are in parentheses.

Sources: 1990 student transcripts; 1987 school record abstracts; 1990 parent/youth interviews

Another important dimension of life is one's friends and social experiences. We saw in Chapter 3 that students with disabilities who spent more time in regular education were less likely to be socially isolated while in school. Social isolation for youth out of school was defined as seeing friends or family members socially less often than once a week, not belonging to any social or community groups in the preceding year, and not being either married or engaged. Previous findings from the NLTS indicated that 5% of youth were socially isolated when they were out of school 2 years or less and 6% were socially isolated when they had been out of school 3 to 5 years. Social isolation was more of a problem for some disability groups than for others. Youth with multiple impairments and other health impairments, in particular, had high rates of social isolation at both time points out of school. (See Newman, 1992, for a discussion of social isolation among out-of-school youth with disabilities.)

The middle columns of Table 5-8 show the relationship between social isolation and time in regular education. Among youth who were socially isolated, 26% had spent three-fourths or more of their time in regular education. The comparable figure for those who were not socially isolated was 51% (p<.05). About one-third of those who were socially isolated had been in regular education less than 25% of the time, compared with 16% of those who were not socially isolated (n.s.). Although far fewer youth experiencing this negative outcome had spent three-fourths of their class time in regular education, regular education in no way "inoculated" youth against future isolation: one-fourth of those who were isolated had participated extensively in regular education.

In addition to social isolation, with its multiple components, we looked specifically at the relationship between being engaged or married and time in regular education. Not surprisingly, the NLTS found that the rate at which out-of-school youth with disabilities married increased with time. Within 2 years after high school, 7% of youth with disabilities were married, compared with 19% 3 years later (p<.001). Young women with disabilities were twice as likely to be married as young men. Thirty percent of the women were married 3 to 5 years out of school, compared with 15% of the men (p<.01; Newman, 1992).

No relationship was found between being engaged or married in the 3 years after high school and time in regular education. Among those who were engaged or married, 56% had been in regular education three-fourths or more of their time. The comparable figure for those not engaged or married was 48%.

The life profiles assemble all of the individual pieces, including the three just examined, into an overall measure of community participation. Thus, those with the highest life profiles, Profile A, were those youth who, according to every indicator available to the study, were fully participating in their communities on the three dimensions measured with the profiles. They were employed or in school full time; they were living independently; they saw friends regularly or belonged to community groups. Youth with Profile B, the second highest profile, were participating on two of the three dimensions (i.e., working or in school, residential independence, and social independence). Youth with Profile E, on the other hand, had no evidence of activity in any of the domains, but were not institutionalized. These profiles and the youth who fit them are described briefly here. (Wagner et al., 1992, provides a more complete analysis of all six life profiles for youth with disabilities.)

Profile A Youth participated fully on all three dimensions. This profile describes youth who were productively engaged full time outside the home, were living independently, and were socially active. On the engagement dimension, the vast majority of youth who fit profile A were employed in competitive, full-time jobs, with a small number working competitively part time, in combination with either job training or postsecondary education. The majority of youth lived with a spouse or roommate, consistent with the high rate of marriage or living with persons of the opposite sex among youth who fit this profile. Overall, 17% of youth with disabilities who had been out of secondary school up to 3 years fit this profile (Table 5-1). Only among youth with visual or speech impairments or learning disabilities did at least 20% of youth reach this highest level of community participation (21% to 29% of youth in these categories), whereas only 3% of youth with multiple impairments and 7% of youth with orthopedic impairments were fully involved in their communities on all three dimensions.

Profile B Youth were participating fully on two dimensions. For example, youth were working competitively full time or were full-time students and were involved socially, but lived at home with parents (and thus were not participating on the residential dimension). Alternatively, youth were married (socially participating) and lived with their spouses (residentially participating), but were not working or working less than full time (not fully engaged outside the home). Youth also could have been fully participating on the engagement and residential dimensions, but socially isolated. Table 5-1 shows that 48% of youth fit this profile when they had been out of secondary school up to 3 years, making it the most common cluster of youth experiences. This profile characterized more than half of youth with speech or other health impairments or learning disabilities, but only 23% of youth with multiple impairments and about one-third of youth with mental retardation.

Profile E Youth were not participating on either the engagement or residential dimensions, but were not living in institutions. These youth were not involved in any work- or education-related activities outside the home and generally lived with parents or other adult family members. Despite their lack of involvement in work or school or in living situations outside their immediate families, few were socially isolated. This profile characterized 18% of youth who had been out of secondary school up to 3 years. This profile was least characteristic of youth with speech impairments (10%), but characterized almost one-third of youth with multiple impairments.

The relationship between time in regular education and the three profiles is shown in Table 5-9. Among the 17% of young adults with disabilities who had achieved Profile A, 70% of them had spent more than three-fourths of their high school day in regular education. This compared with 46% of those who had not achieved Profile A (p<.005). The differences were equally strong among those with little time in regular education. Only 7% of those with Profile A had spent less than 25% of their time in regular education, compared with 19% of those who were not Profile A.

Table 5-9

PROFILES OF COMMUNITY PARTICIPATION AND REGULAR EDUCATION

	Profile A		Profile A or B		Profile E	
	Yes	No	Yes	No	Yes	No
Percentage of youth with time in regular education of:						
0% - 25%	7.0	18.7	11.9	25.6	22.8	15.4
	(3.3)	(2.5)	(2.3)	(4.2)	(6.0)	(2.2)
26% - 74%	23.2	35.5	29.2	41.0	44.1	31.1
	(5.4)	(3.0)	(3.2)	(4.7)	(7.1)	(2.9)
75% - 100%	69.8	45.8	58.9	33.4	33.1	53.5
	(5.9)	(3.2)	(3.5)	(4.5)	(6.7)	(3.1)
n	351	1,411	1,080	682	314	1,448

Based on students in regular and special schools with at least one year of course data.
Standard errors are in parentheses.
Sources: 1990 student transcripts; 1987 school record abstracts; 1990 parent/youth interviews.

A similar relationship, although not quite as strong, was seen for regular education and being Profile A or B. Among those who had the characteristics of either Profile A or B, 59% had spent 75% or more time in regular education. Only 33% of those with the other profiles were in regular education this often (p<.001). Only one in eight of those with Profile A or B spent less than 25% time in regular education, compared with one in four for those with other profiles (p<.01).

Those with Profile E were less likely to be in regular education than those with other profiles. Among youth with disabilities out of school 3 years or less who fit Profile E, one-third had been in regular education three-fourths or more of their time. On the other hand, 54% of those who were not Profile E had substantial regular education participation (p<.01). Twenty-three percent of youth with Profile E were in regular education one-fourth or less of their time, compared with 15% of those who were not Profile E (n.s.). Again, although negative outcomes were associated with less time in regular education, one-third of the youth who experienced a negative outcome spent more than 75% of their day in regular education.

We turn again to the multivariate analysis to identify the independent effects of regular education. Table 5-10 shows the estimated change in postschool outcomes associated with participation in regular education when other factors were controlled in multivariate analysis. We see a consistent and strong pattern between regular education and positive outcomes. For all youth with disabilities, independent of other factors examined, youth who spent all their time in regular education were 13 percentage points more likely to be characterized as Profile

A or B than those who spent half their day there (p<.001). The relationship between more time in regular education and community participation was consistent for all four of the disability clusters, and statistically significant for the mild, physical, and severe clusters. The relationship was particularly strong for youth with physical impairments; those in full-time regular education were 41 percentage points more likely to experience the highest levels of community participation than those with half-time regular education.

Table 5-10

ESTIMATED CHANGE IN COMMUNITY PARTICIPATION ASSOCIATED WITH PERCENTAGE OF TIME SPENT IN REGULAR EDUCATION CLASSES

		Youth with Disabilities			
	All Youth	Mild	Sensory	Physical	Severe
Profile A or B (percentage points)	12.7 ***	14.7 ***	4.8	40.6 **	24.3 *
Profile E (percentage points)	3.1	2.6	0.9	-22.1 **	-6.4
n	1,227	498	436	163	130

Increment for comparison is youth who spent all of their instructional time in regular education classes vs. those who spent half their time there.

* p<.05; ** p<.01; *** p<.001

In contrast, regular education appeared to have little relationship to predicting the inactive life profile, except for youth with physical impairments. Again, this relationship was large and in the expected direction. With other factors controlled, youth with physical impairments who spent all their time in regular education were estimated to be 22 percentage points less likely to be characterized as Profile E than were those who spent half their time in regular education classes (p < .01).

College Preparation Courses and Postschool Outcomes

As noted in previous chapters, not all regular education courses were the same. Courses varied in content, presentation style, and difficulty, among other things. Some courses were intended for students who were going on to college; others were designed for those who were entering the labor force directly after high school. The more difficult academic courses were those that were both most likely to prepare students with disabilities for postsecondary education and most likely to result in failure. As educational reform advocates argue for more academics and higher standards, questions about the role of higher-level academic courses in the educational programs of students with disabilities are becoming increasingly important. What have we learned about the role of college preparatory courses and outcomes for youth with disabilities?

We identified two courses as indicators of student enrollment in a college preparatory track: advanced math and foreign language. Enrollment in either type of course was an uncommon occurrence for students with disabilities. Previous findings from the NLTS show that 18% of students with disabilities who stayed through 4 years of high school took a foreign language class during that time. Only 12% took an advanced math course, which included geometry, trigonometry, or calculus (Newman, 1993). Enrollment rates varied between disability groups, with students with visual impairments being most likely to enroll in either type of course and students with mental retardation or multiple impairments being least likely to. Table 5-11 shows the enrollment rates for students with different disabilities. Other groups with relatively high enrollment in foreign language or advanced math were students with speech, orthopedic, other health, or hearing impairments.

Table 5-11

ENROLLMENT IN ACADEMIC CONTENT COURSES, BY DISABILITY CATEGORY

	All Conditions*	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Hard of Hearing	Deaf	Orthopedically Impaired	Other Health Impaired	Multiply Handicapped
Percentage taking											
Advanced math†	11.8 (1.4)	10.8 (2.0)	17.4 (3.8)	35.8 (4.2)	.5 (.6)	50.9 (4.4)	33.3 (3.4)	21.9 (4.3)	33.6 (4.0)	28.8 (5.0)	3.2 (2.8)
Foreign language	17.6 (1.7)	17.2 (2.4)	20.5 (4.0)	43.6 (4.3)	4.7 (1.7)	61.8 (4.3)	28.8 (3.3)	11.6 (3.3)	40.2 (4.1)	47.7 (5.5)	8.1 (4.4)

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* "All conditions" includes youth in each of the 11 federal special education disability categories. Percentages are reported separately only for categories with at least 25 students.

† Advanced math includes geometry, trigonometry, and calculus.

Based on students with complete data for grades 9 through 12.

Standard errors are in parentheses.

Source: 1990 student transcripts.

We would expect students enrolling in these courses to be the ones most likely to pursue higher education and experience other positive postschool outcomes. The findings of the multivariate analyses summarized in Table 5-12 confirm these hypotheses. For all disability groups, youth who took a foreign language or an advanced math course were 22 percentage points (p<.001) more likely to pursue postsecondary academics than those who did not. The results were in the same direction for all four disability clusters, but were statistically significant only for the mild and physical clusters. Among students in the mild cluster—that is, those with learning disabilities, speech impairments, emotional disturbances, or mild retardation—those who took advanced math or a foreign language course were 27 percentage points (p<.001) more likely to go to a 2- or 4-year college. The results were equally striking for those with physical impairments, for whom we found a 26 percentage point differential (p<.05).

Table 5-12

ESTIMATED CHANGE IN POSTSCHOOL OUTCOMES ASSOCIATED WITH TAKING ADVANCED MATH OR FOREIGN LANGUAGE COURSES

		Youth with Disabilities			
	All Youth	Mild	Sensory	Physical	Severe
Postsecondary academic education (percentage points)	22.0 ***	26.9 ***	19.1	25.6 *	8.6
Postsecondary vocational education (percentage points)	-8.6 †	0.6	-8.5	-19.0 *	-12.2
Competitive employment (percentage points)	4.3	-2.9	-3.5	-2.0 **	8.7
Total compensation (average dollars earned)	175	-1,384	-654	140	1,282
Independent living (percentage points)	17.8 ***	23.5 ***	22.4 ***	3.1	14.2
Profile A or B (percentage points)	14.6 ***	17.8 **	17.0 **	19.0	-21.8
Profile E (percentage points)	-7.6 *	-6.7	-11.7 *	-13.5	34.0

Increment of comparison is youth who took foreign language or advanced mathematics courses at any time in high school vs. those who did not.

Ns for each model were identical to those presented for each outcome variable in the tables for time in regular education.

† p<.10; * p<.05; ** p<.01; *** p<.001

Few statistically significant relationships were found between pursuit of vocational training or employment and taking higher-level coursework in high school. Those that were found showed a negative relationship—that is, the students who took foreign language or advanced math were less likely to take vocational courses or be employed after high school. This can be interpreted as one more indicator of their chosen path, to go on to college. The negative relationship was especially strong for students with physical impairments; those who took higher-level courses were 19 percentage points less likely to pursue postsecondary vocational training ($p < .05$).

Taking higher-level courses in high school was also related to the likelihood that one would live independently in the 3 years after high school. There was an 18 percentage point ($p<.001$) advantage in independent living among those who had taken either a foreign language or an advanced math class. The results were equally strong for students in the mild and sensory clusters. This finding is most probably a reflection of dormitory living for those students while they were attending college.

Youth who had taken advanced math or a foreign language were also more likely to fit either Profile A or B after they were out of school and less likely to fit Profile E. This is not surprising, given that they were more likely to go to college and to live independently. For all youth with disabilities, those with the college preparation courses were 15 percentage points ($p<.001$) more likely to be participating fully in their community (Profile A or B), and they were 7 percentage points ($p<.05$) less likely to be inactive (Profile E). The greater likelihood of community participation was also found for students in the mild and sensory clusters.

In sum, participation in college preparatory courses was found to be related to several positive postschool outcomes, independent of other factors in the model. Students who took such course were more likely to go to college, to live independently, and to be participating members of their community. Several interpretations of this finding are possible. One is that taking advanced courses was in some way responsible for the subsequent positive outcomes. A second interpretation is that students with disabilities who had already demonstrated their competence in academic coursework and who were aspiring to further their education took college preparatory courses and continued successfully on their chosen trajectory. The multivariate models controlled for many factors but, as previously mentioned, could not control for factors that were not measured in the study, such as educational aspirations, past academic achievement, or personal characteristics such as self-esteem or persistence. Differences on these characteristics could explain why some students took college preparatory courses and why they went on to college. The NLTS has found a strong relationship between taking college preparatory courses in high school and positive postschool outcomes for young adults with disabilities. Additional research is needed to explore what lies behind that relationship and its implications for improving secondary education.

Changes over Time

If characteristics of the high school experience affect how young people with disabilities do after leaving school, it is reasonable to hypothesize that the strongest relationships would be

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seen in the years immediately after high school. As time passes, school factors would be expected to show less of a relationship to outcomes.

The NLTS examined this issue by contrasting the relationship between school factors and outcomes for those up to 1 year out of school with the relationship for those out 2 to 3 years. Multivariate models were developed for each group examining the relationship between outcomes and the same set of hypothesized factors, including regular education, college prep courses, and the other factors included in the models previously described.

The estimated changes associated with regular education and college prep courses for each of the outcomes examined in this chapter are shown in Table 5-13. Consistent with what we have already seen, time in regular education is not associated with taking any type of postsecondary education, either for those 1 year out or for those 2 to 3 years out of secondary school.

Table 5-13

ESTIMATED CHANGE IN POSTSCHOOL OUTCOMES OVER TIME ASSOCIATED WITH TIME IN REGULAR EDUCATION AND ADVANCED COURSES

	Percent Time in Regular Education[a]		Took College Prep Courses[b]	
	Out up to 1 Year	Out 2 to 3 Years	Out up to 1 Year	Out 2 to 3 Years
Postsecondary academic education (percentage points)	2.5	4.5	28.7 ***	20.3 ***
Postsecondary vocational education (percentage points)	-1.3	-4.2	-6.2	-5.1
Competitive employment (percentage points)	14.5 *	6.9	-9.3	1.8
Total compensation (average dollars earned)	1,269 *	1,538 **	-1,178 †	-607
Independent living (percentage points)	1.9	7.2	16.4 *	18.0 ***
Profile A or B (percentage points)	5.9	16.1 ***	15.2 †	13.2 *
Profile E (percentage points)	-.4	-4.5 †	-8.7	-7.1 †

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[a] Increment for comparison is youth who spent all of their instructional time in regular education classes vs. those who spent half their time there.

[b] Increment of comparison is youth who took foreign language or advanced mathematics courses at any time in high school vs. those who did not.

† p<.10; * p<.05; ** p<.01; *** p<.001

The likelihood of being employed was strongly related to time in regular education for those immediately out of school, but the relationship was weaker for those out 2 to 3 years. It appears that those with more time in regular education were able to find jobs more quickly after school but that by 2 to 3 years out, those with less time in regular education were also finding jobs and thus closing the gap.

The data on compensation were also consistent with this interpretation. The differences in average dollars earned between those with more or less time in regular education increase as time passes. For youth 2 to 3 years out of school, those with 100% time in regular education were making $1,538 more annually than those with half time regular education, independent of other factors. The difference for those in the first year out of school was only $1,269. If those with more regular education found jobs more quickly, they would have been at their jobs longer 3 years after high school, which usually translates into increased compensation.

No statistically significant relationship was found between independent living and time in regular education at either time point. However, the estimated change in independent living for those with full-time versus half-time regular education was greater for those who had been out of school longer. The pattern suggests the possibility of those with higher amounts of regular education achieving residential independence sooner. This may be related to the compensation factor insofar as a minimum level of income is needed to live independently. Since youth with more time in regular education were making more money, more of them would have reached this minimum level, thus opening the possibility of moving into an independent living situation.

The profile data show that the stronger relationship between regular education and community participation was found for those who had been out of school longer. Among those 2 to 3 years out of school, those who had been in regular education full time were 16 percentage points more likely to have the characteristics of Profile A or B. Similarly, the likelihood of not having a negative profile was greater for those out of school longer who had more regular education. Contrary to the hypothesis mentioned above that school factors would have their greatest effects immediately after school, these data suggest that if regular education is contributing to positive outcomes, its effects seem to snowball and get progressively stronger over time.

Taking college prep courses in high school affects a variety of postschool outcomes, both immediately after school and slightly later. The relationship between taking college prep courses and pursuing postsecondary academics was very strong at both time points but strongest in the first year after high school. By 3 years out, possibly some youth who had not planned to attend college or did not have quite as rigorous a high school program had decided to do so. At neither time point was there a relationship between taking college prep courses and attending postsecondary vocational training.

The relationship between taking college prep courses and finding employment or compensation levels was not statistically significant. The pattern across the four numbers is consistent with proposition mentioned previously, that the greatest impact for high school courses occurs immediately after school. With regard to employment, the immediate impact is nonexistent to negative because these young people have opted to go to college instead.

The findings for independent living and the positive and negative profiles were similar. There was a strong relationship between taking college prep courses and positive outcomes, but the magnitude of the relationship did not differ between those right out of school and those 2 to 3 years out. Taking college preparation courses was positively associated with community participation, and the relationship seemed to hold relatively constant over the first 3 years after high school.

Summary

This chapter has presented what the NLTS has learned about the relationship between time in regular education and outcomes for young adults with disabilities. It also has presented findings on the relationship between taking college preparatory courses in high school and postschool outcomes. Although the pattern of results varied for different outcome measures and different disability clusters, where relationships were found, they consistently favored those who spent more time in regular education in high school. Not a single statistically significant result was found indicating that those who spent **less** time in regular education had better outcomes. The findings for those with physical impairments were particularly noteworthy. Young adults with physical impairments who spent more time in regular education in high school were 43 percentage points more likely to have been employed and 41 percentage points more likely to have the characteristics of full community participation.

Equally strong relationships were found between taking college preparatory courses (advanced math or foreign language) and positive outcomes in the first 3 years after high school. The multivariate models allow us to conclude that these relationships were not due to gender or demographic differences. However, we cannot sort out how unmeasured student competencies might have influenced both course-taking and postschool outcomes. The implications of this issue are discussed in the last chapter, which summarizes what we have learned about regular education for students with disabilities.

6 WHAT WE'VE LEARNED ABOUT REGULAR EDUCATION FOR STUDENTS WITH DISABILITIES

The purpose of the National Longitudinal Transition Study has been to describe the secondary school and postschool experiences of a nationally representative sample of young persons with disabilities. The study was guided by a conceptual framework that suggests that school and postschool outcomes are influenced by a number of individual, household, school, and educational program characteristics. In this report, we have assembled findings from the NLTS about one facet of the educational program of youth with disabilities, regular education, and its relationship to the other components of the conceptual framework. Specifically, we have looked at who took regular education in the late 1980s and how taking regular education courses was related to outcomes attained both during school and in the years afterward.

Reporting data about regular education enrollment is a relatively straightforward task. Interpreting their meaning is considerably more difficult, especially in so controversial an area as regular education for students with disabilities. In this final chapter, we summarize what has been learned and remind readers of some of the multiple and sometimes conflicting alternative interpretations of the findings. We have not shied away from drawing programmatic and policy implications, because the value of the NLTS rests in potential contribution to improving education for students with disabilities. Yet we also present alternative explanations, when appropriate, to allow readers to distinguish clearly between findings and interpretations. Figure 6-1 summarizes what we have learned about the antecedents and consequences of regular education for students with disabilities; it will be referred to throughout this chapter.

How Much Regular Education Did Secondary Students with Disabilities Take?

When viewed from the perspective of the entire population of secondary students with disabilities across the nation, the simple answer to this question is that nearly all took at least a little. The answer changes, however, when we look at subgroups of the population. The majority of secondary students with disabilities spent substantial portions of their school day in regular education classes. Others, especially those with the most severe impairments, spent very little or no time there.

Across all students with disabilities, including those who attended special schools, 84% of students with disabilities took at least one regular education course between grades 9 and 12. Among students who attended regular high schools and were assigned to grade levels, 96% took at least one regular education course. Attendance at a regular high school resulted in enrollment in at least one regular education class for nearly all students with disabilities, except those not assigned to grade levels. These students' impairments were so severe that they did not move through high school, progressing from grade 9 to 10, etc. Only 35% of students not assigned to grade levels in regular high schools took a regular education class.

Students with visual or speech impairments who attended regular high schools participated more extensively in regular education courses than other disability groups. Students with visual impairments averaged 87% of their high school programs in regular education classes; 83% of these students spent three-fourths or more of their class time in regular education courses. Students classified as visually impaired averaged 58% of their class time in regular education **academic** classes (compared with 33% for all students with disabilities). The figures for students with speech impairments were slightly lower but very similar.

Students with learning disabilities, emotional disturbances, hearing impairments, orthopedic impairments, or other health impairments had the next highest regular education participation rates in regular high schools. Students with learning disabilities, for example, averaged 75% of their time in high school in regular education classes; 61% of these youth spent three-fourths or more of their day there. However, as a group, they averaged only 35% of their time in regular academic classes, while 21% was spent in regular vocational classes.

Students classified as deaf participated in regular education less than the students discussed above, but more than those with the lowest participation rates. Only 39% of students with deafness averaged three-fourths or more of their day in regular education classes. Overall, these students averaged 59% of their time in any regular education class and 30% in regular academic classes.

By far, the lowest participation rates of all disability groups assigned to grade levels were for students classified as mentally retarded or multiply handicapped. These students averaged 45% and 34% time in any regular education, respectively, and less than 15% in regular academic classes. Among students with multiple handicaps who were assigned to grade levels, 24% took no regular education classes.

Unlike for academic regular education classes, for which we found substantial variation between disability groups, there was less variation in the amount of regular vocational education. Students with disabilities in regular high schools who were assigned to grade levels averaged 20% of their time in regular vocational courses. The averages for most disability groups were between 17% and 21%, with the notable exception of students classified as orthopedically impaired (13%), visually impaired (13%), or multiply handicapped (11%). Access to regular vocational courses did not appear to be a problem for students with disabilities in general, although it may have been a problem for certain subgroups.

Several disability groups had substantial representation at special schools, with obvious impacts on their opportunities for participation in regular education. Nearly all students classified as deaf/blind attended special schools and, in the absence of special arrangements, did not participate at all in regular education. Two-thirds of students with deafness attended special schools, but their participation rates in regular education were not especially high, even when they attended regular high schools. Forty percent of students with multiple impairments were in special schools, but they participated only minimally in regular education courses even when they attended regular schools. The greatest contrast between regular and special school attendance was found for students with visual impairments, one-third of whom were in special schools. The other two-thirds in regular high school participated extensively in regular classes (and did relatively well there).*

Did the Nature and Degree of Placement in Regular Education Reflect Student Needs and Capabilities?

Yes, to some extent. If decisions about placement in regular education courses were made on the basis of factors related to the educational needs of students, we would expect to see differences in the amount of time students spent in regular education courses for students with different disabilities and for students with different ability levels. We have seen just such variation in the time in regular education courses for students with different disability classifications. The two groups with the greatest intellectual deficits and perhaps the least likelihood of succeeding academically in regular education—students with mental retardation and multiple handicaps—were enrolled in regular education academic classes at rates far below those of other groups.

The relationships between various ability measures and time in regular education substantiated the conclusion that the more capable students spent more time in regular education (Figure 6-1). Those with IQs over 90 averaged 83% time in regular education, compared with 69% for those with IQs between 75 and 90. Those whose math skills were on grade level or up to 2 years below averaged 86% time in regular education; those with math skills more than 2 years below grade level averaged 54%. Another finding consistent with the hypothesis that time in regular education was based on student need was that reading and math levels were related to time in regular academic classes, but not to time in regular vocational classes. Presumably, vocational classes were appropriate to a wider spectrum of students, and indeed were taken by a greater range of them.

Were Student Capabilities and Needs the Only Basis for Placement in Regular Education Courses?

No, other factors also entered into the decision. If decisions about placement in regular education courses were based only on student characteristics, we would expect to see no differences in regular education participation based on factors such as family or school characteristics. Although time in regular education was most strongly related to educationally relevant characteristics of the students, it was also significantly related to family and school factors (Figure 6-1).

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* It was not the case that only the higher-functioning students attended regular schools. Although it was true that those in special schools were, on average, more seriously impaired than those in regular schools, a range of ability levels within the disability group was found in both settings.

Time in regular education in general, and regular academic education in particular, was found to vary in direct proportion to household income. Students from families who made $50,000 or more annually averaged 77% of their time in regular education classes, compared with 63% for those making less than $12,000. The relationship between time in regular education and household income was confirmed in multivariate analysis that held constant disability and functional ability factors.

Several interpretations of this finding are possible. One possibility is that household income was a proxy measure for kinds of student abilities that were not measured by the NLTS. The multivariate analysis controlled for all student characteristics that were measured (disability, functional mental skills, self-care skills, and IQ), but students may have differed along other dimensions related to student competency that were not measured by the study. The dotted box in Figure 6-1 indicates the possibility of unmeasured differences between students that were potentially related to several factors examined by the study. If higher-functioning students, according to these unmeasured dimensions, came from higher-income households, what appears to be a relationship between time in regular education and household income was actually a relationship between time in regular education and student competencies. This would be entirely consistent with how placement decisions should be made.

If the relationship between household income and time in regular education held, without regard to student differences, then placement decisions were influenced by more than student competencies. It is possible that families with higher income levels were more actively involved in arranging courses for their sons and daughters and that they advocated for and received more placements in regular education courses. An alternative explanation is that students from higher-income families attended schools that placed students with disabilities in regular education courses at a higher rate. The study found no support for this hypothesis, however: time in regular education did not vary with the percentage of low-income students in the school when other factors were controlled.

Several other school factors were found to be related to how much time students spent in regular education, independent of all other factors. First, schools in different parts of the country were found to place students in regular education classes at different rates. Students in the West North Central region of the country averaged 13 percentage points more time in regular education than those in the Middle Atlantic states, for example. The other regions were in between. Further, students in schools that reported that mainstreamed students were expected to keep up in regular education without help averaged less time in regular education than students in other schools. Also, students in schools that reported that regular education teachers had received in-service training on mainstreaming averaged more time in regular education than students in other schools.

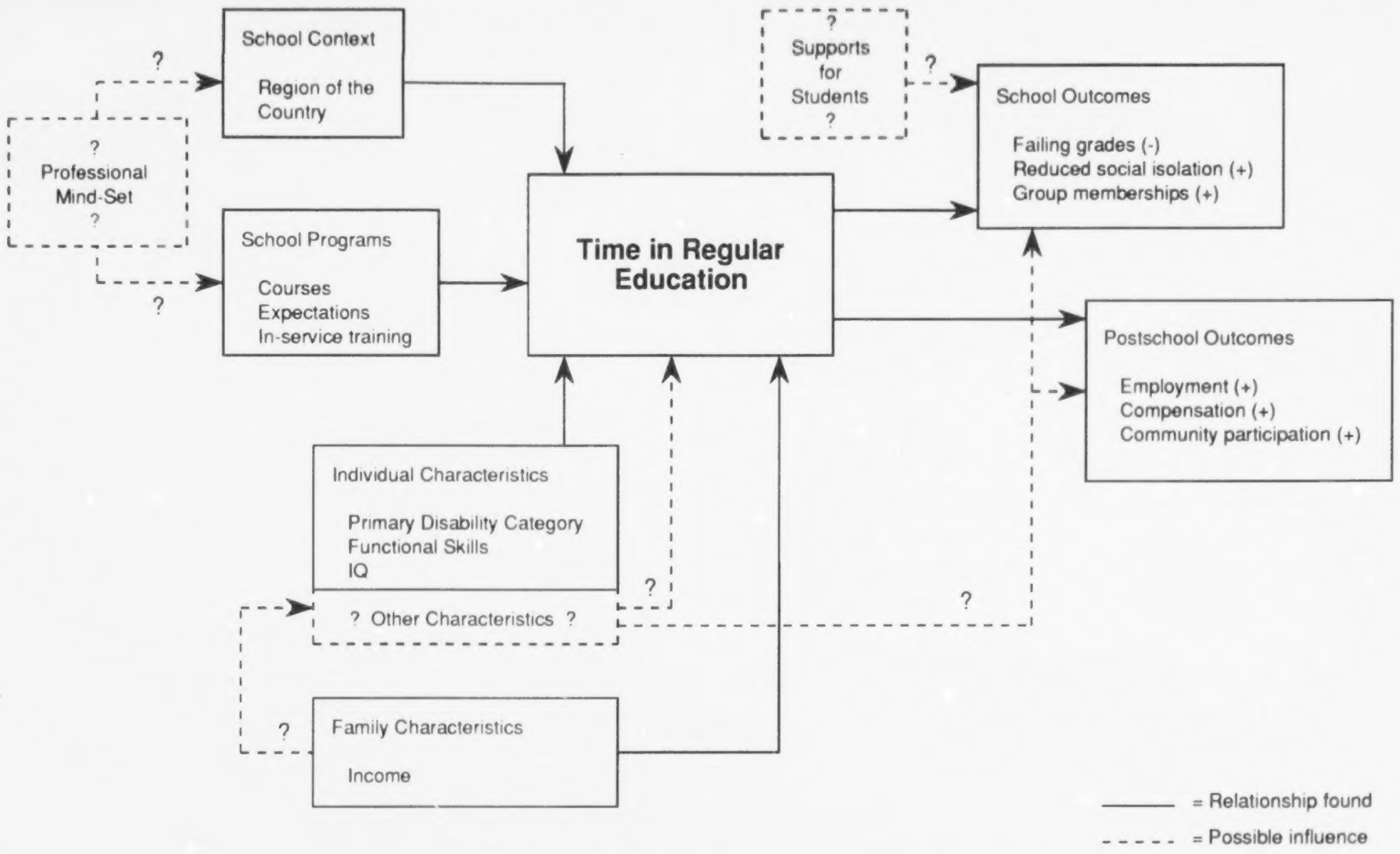

FIGURE 6-1 COMPONENTS OF THE CONCEPTUAL FRAMEWORK FOUND TO BE RELATED TO REGULAR EDUCATION

Viewed together, these school factors suggest that not only student characteristics but "professional mind-set" influenced how much time a given student was in regular education. This hypothesized mind-set is another dotted box in Figure 6-1. The professional community of both regular and special educators has yet to reach consensus on what constitutes an appropriate educational placement and program for many students with disabilities. These differences of opinion may have played out at the school level in different mixes of regular and special education classes for students with disabilities, depending on where they lived or the prevailing attitudes or resources available in their schools. These placement decisions may in fact have been based on individual needs, but different people may have seen the same needs differently, particularly as they pertained to the appropriateness of regular education classes.

Did Students with Disabilities Succeed in Regular Education Classes?

Some did, some did sometimes, and some didn't at all. Some places and times in the regular secondary program were especially challenging.

Students with disabilities averaged lower grade point averages (GPAs) in their regular than in their special education courses. Freshmen and sophomores in both settings averaged lower grades than upperclassmen. Twelfth-graders, for instance, averaged 2.3 (on a 4-point scale) in their regular education classes and 2.5 in their special education classes. Ninth-graders earned an average GPA of 1.9 in regular education classes and 2.2 in special education classes. Several circumstances could explain why 12th-graders got better grades than 9th-graders. For one, 9th-graders took more academic courses. Further, the average GPA for 9th-graders included the grades of students who went on to drop out of school before 12th grade. Many of the students who eventually dropped out of secondary school earned low grades before they did so.

Unlike GPA, which can be difficult to interpret because of varying grading standards, receipt of an F in a course is a definitive indicator of academic difficulty. Among students with disabilities who stayed in high school for at least 4 years, 59% received one or more F's in regular education courses during that time. During 9th and 10th grades alone, the grade levels with the most academic courses and the most students at risk for dropping out, 41% and 42% of students with disabilities received one or more F's in a regular education course.*

Receipt of a failing grade in regular education was more of a problem for some disability groups than others. Failing courses was especially problematic for students with serious emotional disturbances. Among 9th-graders classified as seriously emotionally disturbed, 55% failed one or more courses. This group of 9th-graders failed, on the average, 22% of their regular education courses. In fact, 16% of 9th-grade students with serious emotional disturbances failed 6 or more regular education classes during that year. The end result of these high failure rates was predictable: the NLTS has found that these students dropped out of school at a rate far higher than that of any other disability group (Wagner, Blackorby, and Hebbeler, 1993).

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* Based only on students who took regular education courses.

Academic regular education classes were the most challenging for students with disabilities. The more regular education academic classes students with disabilities took, the more likely they were to receive an F. A multivariate analysis indicated that, at every grade level, students with disabilities with more time in regular academics were found to be more likely to receive failing grades, independent of other factors. Inconsistent relationships were found between time in academic regular education and student absenteeism, and no direct relationship was found to dropping out. At each grade level, students who took more regular education or regular academic education classes were not more likely to drop out than students who took fewer such courses. However, an indirect relationship is apparent, in that the higher course failure rate associated with more time in regular education was a powerful predictor of students' later dropping out of school.

On the other hand, there were success stories in regular education. The flip side of a finding reported above is that 41% of students with disabilities made it through 4 years of high school without ever receiving an F in a regular education course. Thirty percent of students with visual impairments and 29% of those classified as speech impaired spent more than three-fourths of their time in high school in regular education classes and averaged a GPA of 3.0 or better. Sizable minorities of those with other health impairments (20%), orthopedic impairments (18%), or hearing impairments (17%) did likewise.

Did Students with Disabilities Succeed in Special Education Classes?

This may strike some readers as an odd question, because the answer should be an obvious 'of course they did"; these courses were intended specifically to meet the identified educational needs of these students. Students with disabilities earned a higher GPA in special than regular classes, suggesting that special education courses were an easier environment, but success in special education was not a given.

Students with disabilities in regular secondary schools did fail special education courses, although not to the extent they failed regular education courses. During 9th and 10th grades, the school years studded with educational minefields, almost one in five students with disabilities who took a special education course failed one or more of them. For students classified as seriously emotionally disturbed, the figure was 26%. For students with disabilities who completed 4 years of school, one in five failed at least one special education course during high school.

Many students who failed regular education courses also failed special education courses. The correlation between failing a regular and a special education course was relatively high (e.g., .58 for 9th-graders, $p < .001$). Some of the F's received by students in both regular and

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special education classes could be related to cutting classes and not strictly to performance in the classroom. If a school had a policy that required the student to lose credit for a course after a certain number of absences, the student who missed school would have failed both regular and special classes. This can be particularly detrimental because cumulative loss of credit pushes the goal of graduation farther and farther out of the range of the possible.

Why Did Some Students with Disabilities Fail in Secondary School?

The simple answer to this question is that some students with disabilities failed because the coursework in regular education was too difficult for them. After all, these students were eligible for special education because they were determined to have impairments that adversely affected their educational performance.

The more difficult issue involves the programmatic and policy implications that follow from high rates of course failure. There are several contrasting views. One view says that students with disabilities should not take as many regular education courses, especially academic courses, because these courses are too difficult and not geared to their needs; thus, they will do poorly in them. More special education would allow them to experience the success that eludes them in regular classes. Another view says that regular education courses represent a high-risk environment for students with disabilities and that, unless they are provided with sufficient supports, many will do poorly. This viewpoint assumes that students can and must be provided sufficient support to negotiate the environment successfully.

The reader is reminded that the data from the NLTS were based on the secondary school programs of students with disabilities between 1985 and 1990. The data tell us how students did under the set of circumstances at the time. A different kind of research is necessary to identify the kinds of supports needed or the way a secondary program would have to be structured to ensure "success for all." It is clear that schools, as they existed in the late 1980s, are not the only way schools could be. The massive amount of attention being devoted to school reform attests to the high level of dissatisfaction with the ability of schools, as they currently exist, to meet the needs of students, whether or not those students have disabilities. Reform will almost certainly affect the educational programs of students with disabilities in the future, but the direction of the impact remains to be seen.

From the NLTS, we can glean several insights into why students with disabilities encountered problems in regular education courses and what might be done to improve their prospects for success there. We can begin by contrasting the regular and special education classrooms. The regular academic classes averaged 1 teacher and 23 students, 2 or 3 of whom had disabilities. The special education classes averaged 1 teacher and a part-time aide and 9 students. We can also contrast the lower grade levels of high school with the upper grades. In the lower grades, students took more academic courses and fewer vocational classes (Wagner, Blackorby, and Hebbeler, 1993). In a cruel stroke of educational Darwinism, high school programs were structured so that the youngest students spent the most time in highly demanding and what, for many, may have been the least motivating environments. If the students survived, and many did not, their load was lightened during the subsequent 2 years.

To understand why students failed, we also look at the supports provided to assist learning in those regular education environments. Teachers reported that nearly all students with disabilities received at least one accommodation when they were in regular education classes, but the percentages of students receiving any particular accommodation were low. Fewer than half of students with disabilities in regular academic classes had their progress monitored by a special education teacher. Tutoring from a special education teacher was provided to slightly more than one-third of students who were placed in regular classes. One in 10 received modified tests. Nearly all mainstreamed students had regular education teachers who reported receiving some kind of support because students with disabilities were in their classes, but most of that support was in the form of consultation from the special education staff. Only one in five students had teachers who reported receiving training in the needs of students with disabilities, and only 14% had teachers who reported that special materials had been made available to them. Aides were nearly nonexistent; the teachers of only 7% of mainstreamed students had them to help their students with disabilities. Together with the data on supports provided to students, it is not difficult to understand the failure rates. When three-fourths of students with learning disabilities were not receiving assistance with study skills, more than one-third of students with mental retardation were in academic classes without monitoring from a special education teacher, and 9 out of 10 students with serious emotional disturbances had no behavior management programs in their academic classes (Newman, 1993), should we be surprised that some students with disabilities failed in regular education courses?

The excessive failure rates in regular education academic courses for students classified as seriously emotionally disturbed merits an additional comment. For the most part, these were not students with intellectual deficits. The average IQ of students with serious emotional disturbances was identical to the average for students with visual impairments (Marder and Cox, 1991), who, as we have seen, did quite well in regular high schools. Nevertheless, getting passing grades and accumulating credits toward graduation represented a significant challenge for many students with serious emotional disturbances. Interestingly, teachers reported that 12th-graders with emotional disturbances were expected to keep up in regular academic classes, and that 95% generally did. However, only 37% were reported to comply consistently with the behavioral expectations of the academic classroom. When setting changed for these youngsters, so did their behavior; 52% were seen as complying with behavioral expectations in their work experience programs. Other research on populations at high risk for dropping out of school has shown that the highly verbal, abstract, and, to some students, meaningless environment of academic courses can present insurmountable hurdles (Wehlage et al., 1989). Other NLTS data have shown that only 34% of 9th-graders with serious emotional disturbances received personal counseling or therapy from their schools

(Cameto, 1993). The particular constellation of prevailing circumstances in high schools appears to have been especially destructive for students with serious emotional disturbances.

Were There Social Benefits During High School for Students with Disabilities Who Took More Regular Education?

In general, yes. As measured by the degree of social isolation or whether students joined groups and clubs, students with disabilities who took more regular education were more likely to achieve positive social outcomes during high school. The NLTS found that social isolation, defined as getting together with friends less often than once a week outside of school and not belonging to any school or community group, was not a common occurrence for students with disabilities, but was more common for those with severe impairments who did not take much regular education. With other factors controlled, students with more time in regular education were found to be 3 percentage points less likely to be socially isolated than those with less time in regular classes. There were no differences in social isolation between students in regular and special schools, independent of other factors.

The findings for participation in school or community groups showed a similar positive relationship to time in regular education. Independent of other factors, youth with more time in regular education were more likely to belong to groups during high school. Students in special schools also were more likely to belong to groups, with other factors controlled. Further, membership in groups during high school was an important early predictor of good things to come later. Students who belonged to groups during high school were found to have significantly better postschool outcomes than those who did not (Wagner, Blackorby, Cameto, and Newman, 1993).

Alternative explanations for these findings are possible. Did the increased opportunity for interaction with nondisabled peers broaden students' interests and their social networks in such a way that they wanted to be part of organized social activities? Or were some students with disabilities more socially competent than others and did this social competence result in more time in regular education classes **and** increased participation in organized groups and clubs? The NLTS analyses used every measure available to try to equalize groups with regard to factors other than regular education participation.* However, to the extent the groups differed on factors not measured, such as social competence, differences in time in regular education and being socially involved may both be reflections of other differences between students.

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* The indicator of how well the NLTS was able to do this is the amount of variance the study was able to explain in the multivariate model that examined who took regular education (see Chapter 3, page 3-19). The model identified a number of important factors related to regular education participation. However, it was able to explain only 38% of the variance in regular education participation suggesting that many factors that are part of the answer to the question of who takes regular education courses were not measured by the study.

Regardless of which interpretation one accepts, there is no evidence to suggest that time in regular education was detrimental to either of these social outcomes in the way it is detrimental to academic outcomes. However, other aspects of personal and social development among adolescents that the study did not look at may be influenced negatively by the extent of difficulty experienced in regular education classes. Receipt of failing or low grades can contribute to a low self-concept, low motivation, or alienation from school. These were not measured by the study directly, but all are potential side effects of repeated failure. In sum, time in regular education may be producing both positive and negative social outcomes, only some of which the study measured.

Was Taking Regular Education Classes Associated with Positive Postschool Outcomes?

Yes, for some outcomes. Independent of other factors we analyzed, students with disabilities who had taken more regular education courses in high school were more likely to be employed and to make higher salaries in the 3 years after high school than students who had taken fewer regular education courses (Figure 6-1). This relationship between regular education and employment was strongest for those up to 1 year out of school, suggesting that those with more time in regular education were able to locate jobs more quickly. By 2 to 3 years out of high school, their classmates with less time in regular education were employed at similar rates. Those with more time in regular education earned more at both time points, but the difference was greatest for those 2 to 3 years out of school. Increased compensation may be the benefit of a longer work history for the youth with more regular education who entered the labor force earlier than those with less time in regular education.

Youth who had spent more time in regular education were also more likely to be fully participating in their communities. Community participation was a composite measure of independence and included employment status, postsecondary attendance, residential arrangement, and social activities. Youth with more time in regular education in their backgrounds also were less likely to be inactive in their communities on those dimensions. The relationship between time in regular education and achieving community participation increased over time. The differences favoring those with more regular education participation were greater among those who had been out of school 2 to 3 years than they were for those out 1 year or less, independent of all other factors. No relationship was found between regular education and attending a postsecondary institution or living on one's own.

The relationships between time in regular education in high school and positive outcomes as a young adult were different across the disability groups. Regular education was related to employment and dollars earned for those with sensory impairments (visual impairments, hearing impairments, deafness) and those with physical impairments (orthopedic impairments, other health impairments). No relationship between regular education and employment was found for those with mild impairments (learning disabilities, serious emotional disturbances, speech impairments, mild retardation) or severe impairments (moderate or severe retardation, multiple handicaps, deaf/blindness). The likelihood of achieving full community participation was higher for those with more time in regular education with mild, physical, or severe impairments. Those with physical impairments and more time in regular education were also less likely to experience negative outcomes (e.g., unemployment, social isolation) in their first 3 years out of high school. The extent of the difference in outcomes associated with regular education was especially strong for young adults with physical impairments. Youth with physical impairments who had been in regular education full time were 43% more likely to have a job than those who had been in regular education only half time. They were 41% more likely to be fully participating in their communities in the 3 years after high school.

In addition to overall time in regular education, the NLTS looked at the relationship between adult outcomes and two kinds of regular education courses generally considered part of the college preparatory track. A multivariate analysis that controlled for a number of individual, household, and school characteristics showed that students who had taken either a foreign language or an advanced mathematics course were estimated to be 22 percentage points more likely to enroll in a postsecondary academic program than those who had taken neither type of course. The relationship between taking college prep courses and achieving positive postschool outcomes was strong at both time points but strongest in the first year after school.

The important, but difficult, question raised by these findings is whether spending time in regular education actually brought about these positive outcomes for young adults with disabilities. Regarding taking higher-level courses in high school, it seems clear that those courses did not **cause** students to pursue postsecondary education. Some students had a goal or a wish for postsecondary education and took a program of high school courses appropriate to that goal. There is no basis for concluding that enrolling students at random in advanced math would result in their going to college. Rather, high school courses are road signs to where students are headed, and some do go where the signs say they will. These predictors may well become gates, however, that open or close off opportunities for postsecondary education, and, in that sense, they may contribute to the likelihood of furthering one's education.

The interpretation behind the relationship between more time in regular education and positive outcomes as a young adult is not so apparent. It is reasonable that the intellectually and socially most competent students with disabilities enrolled in more regular education courses, and that these same traits served those youth well when they left school. The analyses were able to control for some but not all differences among students with disabilities. It is equally reasonable that increased time in regular education classes enhanced overall intellectual and social competence by providing better preparation for adulthood and, thus, more regular education actually led to greater success in the years after school. Both hypotheses could be true. Additional research is needed to further understand why more time in regular education in high school for students with disabilities was associated with better outcomes as a young adult.

The positive nature of this relationship is particularly interesting, given how difficult some regular education courses were. Regular education courses exposed students to significant academic risk, yet the students who took more of them did better in adulthood—if they managed to graduate from high school. At the very least, these analyses suggest that regular education classes did not have lasting negative effects. Across a number of analyses of postschool outcomes, the message was the same: those who spent more time in regular education classes experienced better outcomes after high school. Before we can draw policy or educational implications from this finding, however, we need to understand more about why it occurred.

Conclusion

One question that we have not answered in this report is: "Is regular or special education better for students with disabilities?" This is a deceptively simple question that hides many complexities. Better for which students? Better at accomplishing what? What kind of regular education—remedial math, advanced creative writing, machine shop, or physical education? With how many students? With how much and what kinds of support? Good regular education of bad regular education? Good special education or bad special education? The NLTS has aggregated data for thousands of youth with disabilities to look for general trends and patterns. In reality, however, there is no average student with disabilities—just as there is no average regular education class in high school. The deceptively simple question is meaningless in the abstract. It takes on meaning only when it is raised with regard to particular students in particular circumstances with particular needs and goals.

We have seen the enormous variation that exists within the population of secondary students with disabilities. We have learned that most students in special education were actually "in special education" very little. Others were in special classes for most or even all of secondary school. Some students with disabilities earned good grades from a program weighted with regular education academic courses and furthered their education after high school at a college or university. Others failed large numbers of regular and special education courses and dropped out before reaching 10th grade. Some barely made it through the academic regular education courses but found a home in regular vocational courses. They found jobs after school, set up their own households, and spent leisure time with friends and family.

Given the diversity of student needs, the variety of course options at the secondary level, and the range of transition goals possible, P.L. 94-142's vision of individualized planning seems as appropriate today as it was in 1975. We've learned, however, that being able to meet the needs of students with disabilities requires having real choices. A choice between failing in regular education and succeeding in special education isn't much of a choice. We have looked at the first generation of students educated completely under P.L. 94-142 and have learned that access to regular education is associated with positive outcomes but that it also comes with a high price tag. Maybe it's time to lower the price.

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